REPORT

TO THE

SAN FRANCISCO CITY-STATE JOINT FREEWAY STUDY

ON THE

GEOMETRIC DESIGN AND TRAFFIC STUDIES ASSOCIATED WITH THE PANHANDLE AND GOLDEN GATE FREEWAYS

FEBRUARY 1966

APPENDIX 4

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San Francisco City-State Joint Freeway Study
on the
Geometric Design and Traffic Studies
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Prepared by the State Division of Highways
February 1966

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To: Co-Directors:

T. J. Mellon
Chief Administrative Officer

T. J. Kent, Jr.
Coordinator of Housing,
Planning and Development

City and County of San Francisco

Date: February 14, 1966

File: 04-SF-80,280,480
04107 - 334900

From: Alan S. Hart, District Engineer
California Division of Highways, District 4

Subject: Report on State Participation in City's Restudy of the Panhandle Parkway and Golden Gate Freeway

Introduction

This report covers participation by the California Division of Highways in the City's restudy of the Panhandle Parkway and Golden Gate Freeway as requested by San Francisco Board of Supervisors' Resolution Number 795-65, adopted December 13, 1965. Detailed discussion and comments are limited to studies performed under City-State Agreement executed December 29, 1965. Reference is made to earlier studies as presented in State Technical Reports on the Panhandle Parkway and Golden Gate Freeway dated March 1964 and March 1965, respectively.

Contents

This report contains the technical data prepared by the State during the joint study. Certain assumptions are based on findings of the various City departments and consultants. The evaluation charts contain basic cost and right-of-way information and the several exhibit maps illustrate the new proposals. Updated cost estimates for the State Highway Engineer's recommended locations

are included for each corridor to facilitate review and evaluation of new proposals.

No attempt is made to include detailed breakdown of right of way by type of improvement. The housing consultant will cover this in his report. The housing consultant and the architectural consultants will also present their findings for joint use possibilities at several locations.

A brief outline of the earlier planning studies in these corridors is included for historical reference.

History

In 1962 the San Francisco Board of Supervisors passed a resolution requesting a study of the Panhandle-Park-Presidio Corridor. The study was started in late 1962 and most of the data were compiled in 1963. The results of this study were presented to the Board of Supervisors early in 1964. Several public map displays and a public hearing followed the initial presentation to the Board.

The opposition centered around the idea that the freeway would ruin the park and, therefore, freeway construction should not be permitted in park areas. In line with public opinion, the State Highway Engineer recommended the E-1,K,L-3 combination of alternatives as best minimizing disruption to park areas while providing the necessary traffic service.

Alternative E-1 was an open depressed freeway located just south of the Panhandle Park. It avoided most of the Panhandle but required the half block of buildings facing the Panhandle. Alternative K for Golden Gate Park used the space under existing streets for most of its length. Inbound traffic was placed in a tunnel under Main Drive. Outbound traffic was placed in a tunnel under the northeast corner of the park and in an open section under Fulton Street west of Arguello Boulevard. The L-3 design along Park-Presidio Boulevard retained local traffic in its present location but on structure over a depressed freeway. No elevated viaduct was necessary.

The Board of Supervisors rejected the State Highway Engineer's recommendation in May of 1964, but agreed to a study of Alternative F, with modifications, as proposed by the City Planning Commission.

During this restudy, the Recreation and Park Commission reviewed the modification of Plan F but stated they preferred tunnels in park land. Alternative G-2, a tunnel in the Panhandle, and Alternative H-2, a tunnel under Fulton Street and the northern edge of Golden Gate Park, were developed by the State and were approved by the Recreation and Park Commission. The City Planning Commission and the City Department of Public Works concurred.

The opposition to freeway construction by this time had added to its objections. The relocation of people, the loss of low-cost housing, and the disruption to the community became major issues in addition to park land.

The Board rejected the compromise alternatives by a 6 to 5 vote on October 13, 1964. The California Highway Commission did not adopt a route in the face of this opposition by the Board, and the project was declared inactive pending a change in City policy.

Meanwhile, in response to another resolution passed by the San Francisco Board of Supervisors, studies for location of Route 480, the Golden Gate Freeway, were begun early in 1964. The studies were completed early in 1965 and formally presented to the Board March 8, 1965.

Public map displays were held later in March and a public hearing was held April 9, 1965. Information gathered at this hearing formed the basis for the State Highway Engineer's recommendation that Plan F,F-5 be adopted by the California Highway Commission as the location for Route 480. This alternative skirts the easterly and northerly faces of Telegraph Hill, then lies between Bay and North Point Streets until it reaches Fort Mason. It crosses the southwest corner of the new Gashouse Cove Yacht Harbor, veers westerly outside the Marina Green, and connects to the Golden Gate Bridge approach with a below-ground-level interchange.

The joint Transportation and Planning and Development Committee of the Board held several public hearings on the project. This resulted in passage of Board Resolution No. 475-65, which rejected the State plan and recommended a plan submitted by the

San Francisco Chamber of Commerce. The Chamber plan utilizes three tubes passing under Bay, North Point and Beach Streets, which join together in Fort Mason, pass under Marina Boulevard and join with the approaches to the Golden Gate Bridge in the Presidio.

The current restudy is an extension of earlier planning by putting all proposals under the careful scrutiny of the City, the State, and several teams of consultants in an effort to overcome objections to freeways in these corridors.

TRAFFIC PROJECTIONS

The traffic data presented in this restudy represents a restudy of previous projections for the Golden Gate and Park-Presidio-Panhandle Freeways. Primarily, it is based on planning data supplied by the San Francisco City Planning Department concerning future development of the City and information received from other agencies. Factors considered in the projections were: future land use, population and employment growth, the growth of automobile ownership and usage, and public transit patronage.

This traffic review has been done with the advice and full cooperation of the City's Traffic Division.

Traffic projections have been developed for 27 different combinations of freeway plans. These combinations are made up of either or both of the two proposed freeways, with various

interchange patterns. All combinations have been studied with Golden Gate Bridge as it now exists and with a second deck added to the bridge. Thus, a total of 54 alternates were studied.

The three traffic networks presented on the following pages were chosen by the City staff, based upon the degree of service each provided. This included an extensive analysis of the effect each would have on city street vehicular volumes. All three show the Golden Gate Bridge with a volume of 160,000 vehicles per day, the anticipated capacity of a double-deck bridge. This higher volume on the bridge must now be assumed since the Directors of the Golden Gate Bridge and Highway District have already approved this construction, in principle.

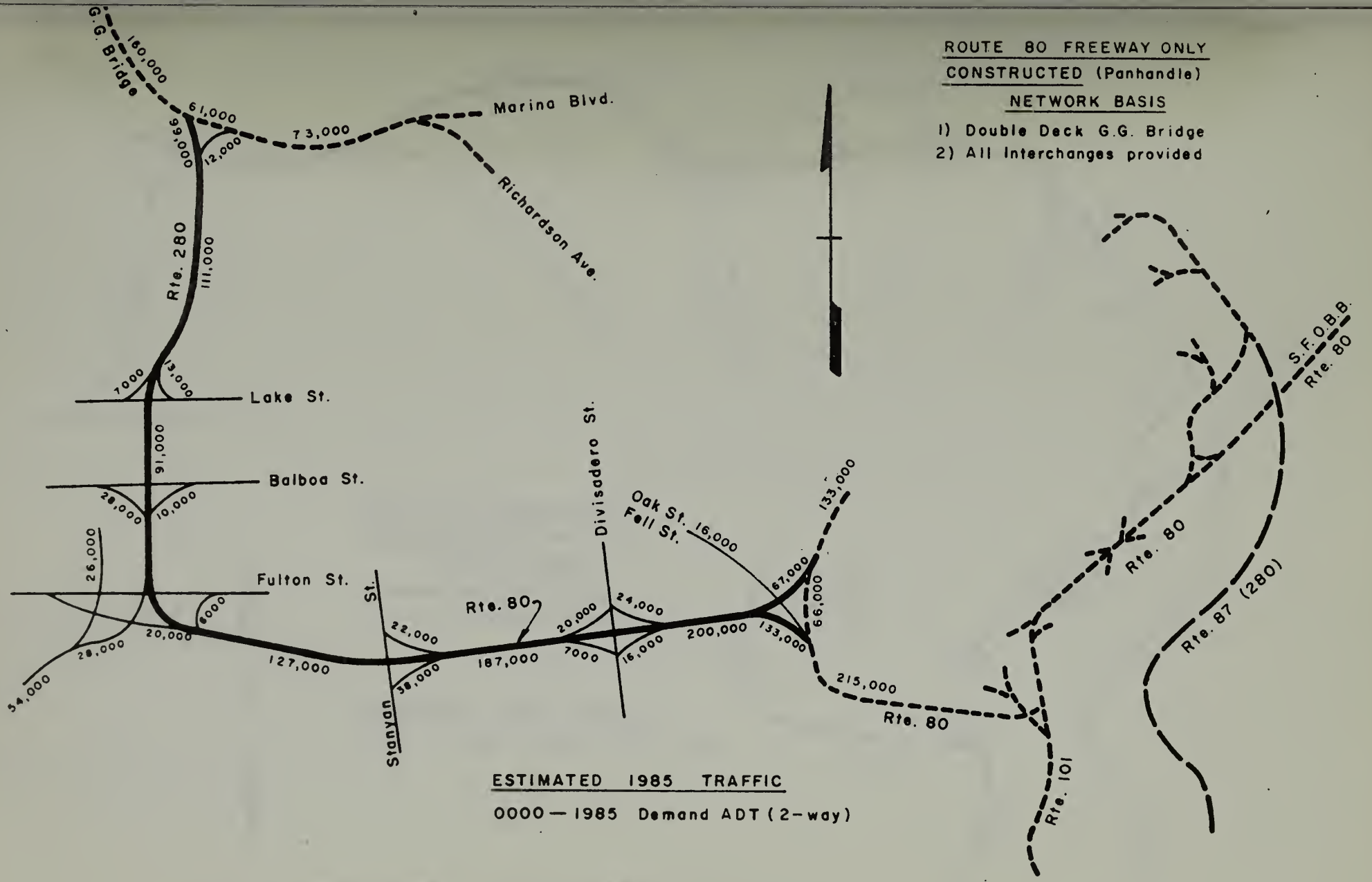
In conclusion, this study illustrates that:

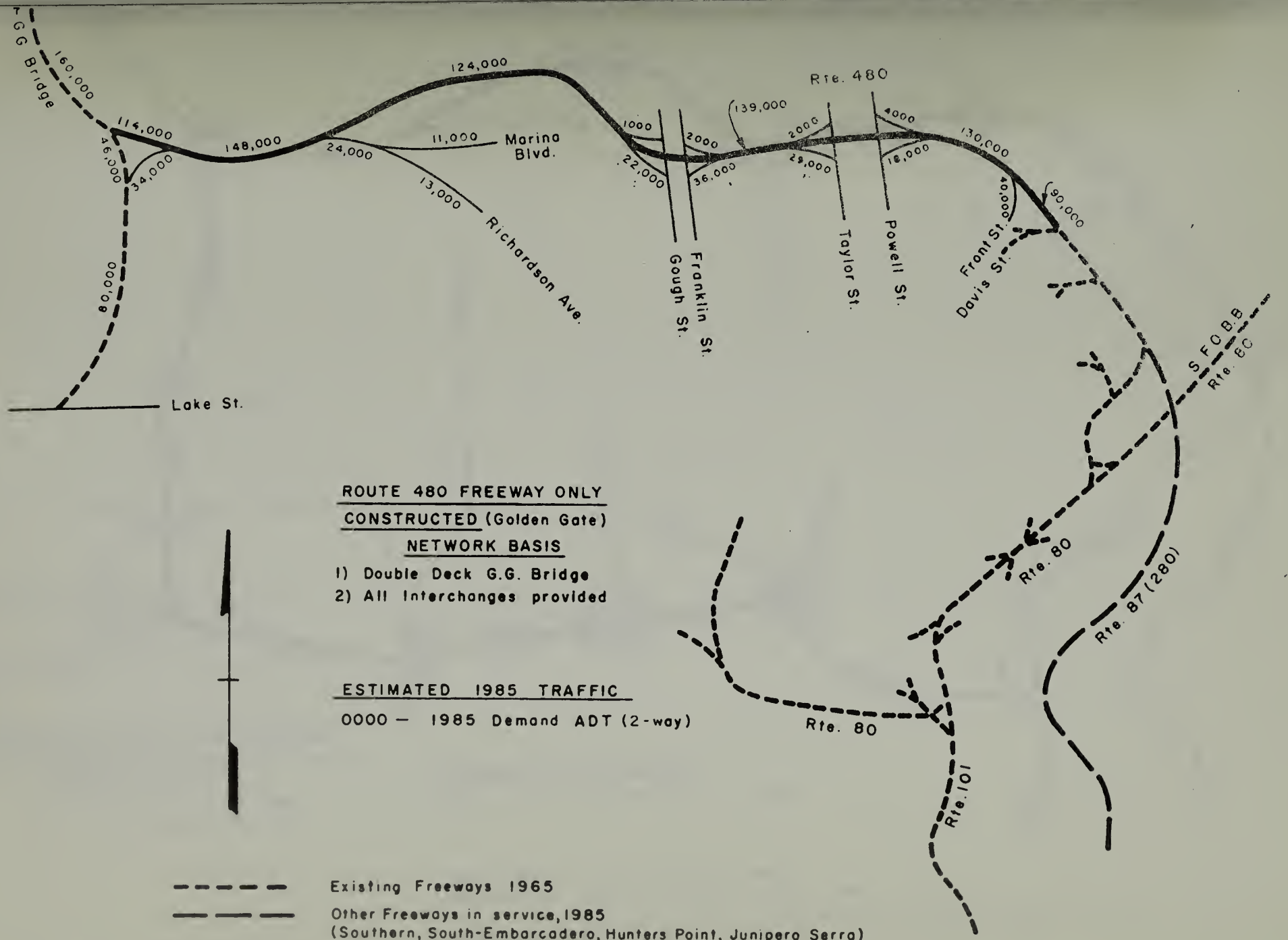
(1) Either freeway by itself provides traffic relief to the streets in its corridor; however, the streets in the other corridor are left severely congested.

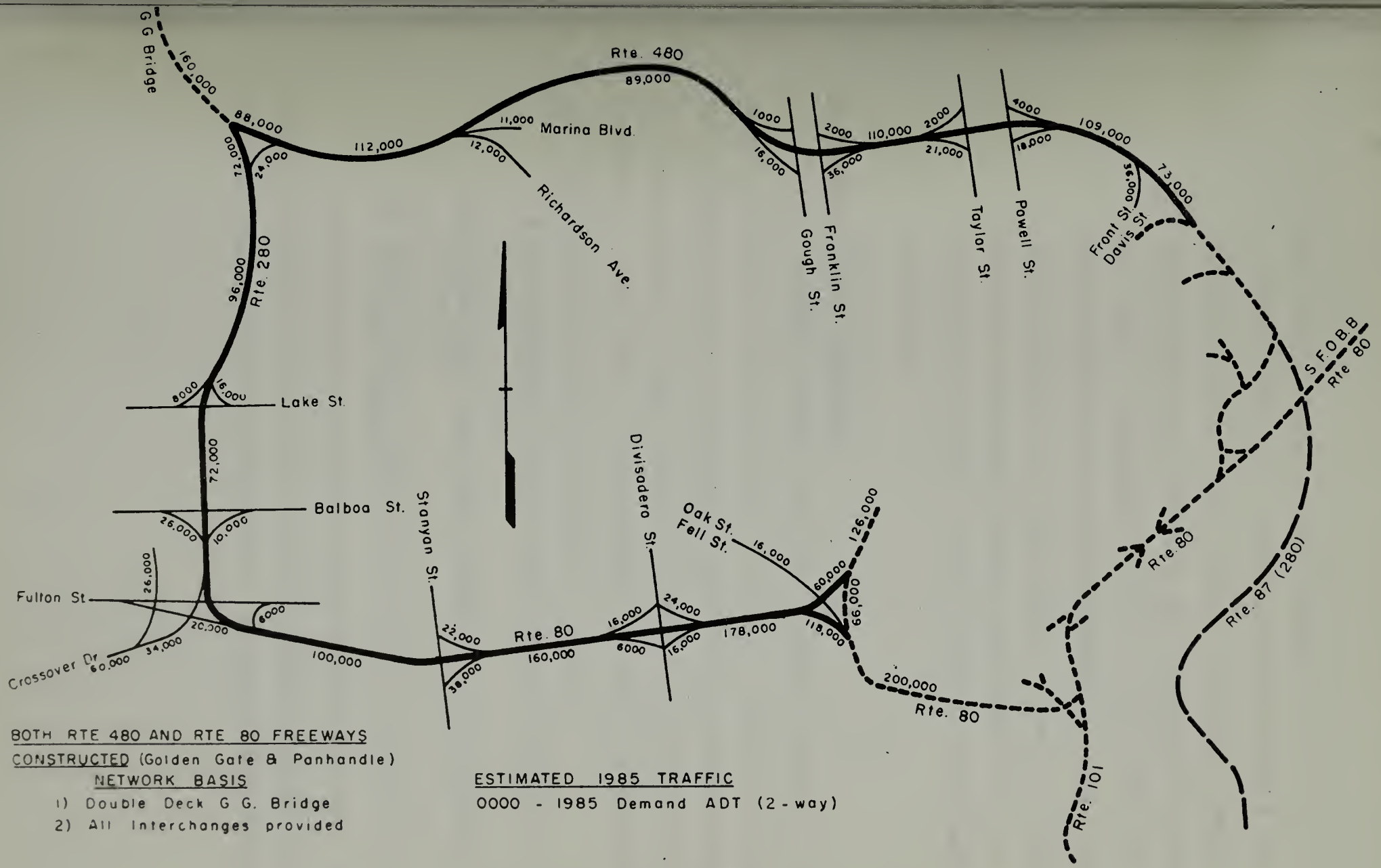
(2) One freeway by itself would be congested during periods of peak use.

(3) When interchange ramps are deleted, the vehicles desiring to use those ramps must travel on the city streets for a greater part of their journey. This partially defeats the purpose of the freeway.

(4) The construction of one or both freeways can provide a significant benefit to local bus operation. This has occurred in many other cities.


ROUTE 80 FREEWAY ONLY
CONSTRUCTED (Panhandle)
NETWORK BASIS
1) Double Deck G.G. Bridge
2) All Interchanges provided
G.G. Bridge
160,000
61,000
99,000
12,000
73,000
Marina Blvd.
Richardson Ave.
Rte. 280
111,000
7000
13,000
Lake St.
91,000
Balboa St.
28,000
10,000
26,000
Fulton St.
54,000
28,000
20,000
8000
127,000
St.
22,000
38,000
Stanyan
Rte. 80
187,000
Divisadero St.
20,000
7000
24,000
16,000
Oak St.
Fell St.
16,000
200,000
67,000
133,000
66,000
133,000
215,000
Rte. 80
Rte. 101
S.F.O.B.B.
Rte. 80
Rte. 80
Rte. 87 (280)
ESTIMATED 1985 TRAFFIC
0000 — 1985 Demand ADT (2-way)
Existing Freeways 1965
Other Freeways in service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being studied, assumed in service 1985


GG Bridge
160,000
114,000
46,000
34,000
148,000
124,000
24,000
11,000
Marina Blvd.
13,000
Richardson Ave.
000'08
Lake St.
1000
22,000
2000
36,000
Gough St.
Franklin St.
139,000
20,000
29,000
Taylor St.
Rte. 480
4000
18,000
Powell St.
130,000
40,000
Front St.
Davis St.
90,000
S.F.O.B.B.
Rte. 80
Rte. 80
Rte. 87 (280)
Rte. 80
Rte. 101
ROUTE 480 FREEWAY ONLY
CONSTRUCTED (Golden Gate)
NETWORK BASIS
1) Double Deck G.G. Bridge
2) All Interchanges provided
ESTIMATED 1985 TRAFFIC
0000 — 1985 Demand ADT (2-way)
Existing Freeways 1965
Other Freeways in service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being studied, assumed in Service 1985



BOTH RTE 480 AND RTE 80 FREEWAYS
CONSTRUCTED (Golden Gate & Panhandle)
NETWORK BASIS

1) Double Deck G G. Bridge
2) All Interchanges provided

ESTIMATED 1985 TRAFFIC
0000 - 1985 Demand ADT (2-way)

Existing Freeways 1965
Other Freeways in service, 1985
(Southern, South - Embarcadero, Hunters Point, Junipero Serra)
Freeways being studied, assumed in service 1985

(5) The future growth of San Francisco calls for a balanced network of freeways combined with a compatible system of city streets and public transit. If any one of the three is not provided, the other two will be congested to such an extent that less than minimal service can be provided during periods of peak demand. If this occurs, it must be expected that San Francisco's future development will be seriously impaired, to the detriment of its permanent population.

PANHANDLE PARKWAY CORRIDOR

The Panhandle Parkway Corridor extends westerly in the general vicinity of Oak and Fell to Stanyan; through or along the northerly edge of Golden Gate Park to Park-Presidio Boulevard at Fulton Street and then along Park-Presidio Boulevard into the Presidio at Lake Street. For purposes of analysis, the corridor has been broken into three sections as follows:

(1) The Panhandle Section (from Central Freeway to Stanyan Street)

(2) Golden Gate Park (from Stanyan to Park-Presidio Boulevard)

(3) Park-Presidio (from Fulton Street to north of the Presidio Tunnel)

All alternatives provide similar traffic service. Important points of traffic distribution occur at Stanyan Street and at Park-Presidio Boulevard and Fulton Street. Estimated 1985 traffic

volumes indicate demand in excess of design capacity for 8 lanes in the Panhandle Section and 6 lanes in the Golden Gate Park and Park-Presidio Sections.

Panhandle Section cost estimates are based on 8 lanes and include $12.0 million for the Board of Supervisors' requested extension of the Central Freeway under Van Ness Avenue to aid in the distribution of traffic to "Downtown". Cost estimates for new studies in the Golden Gate Park Section are based on 6 lanes with 8-lane costs also shown in the Evaluation Chart. Park-Presidio Section costs continue to be based on 6 lanes.

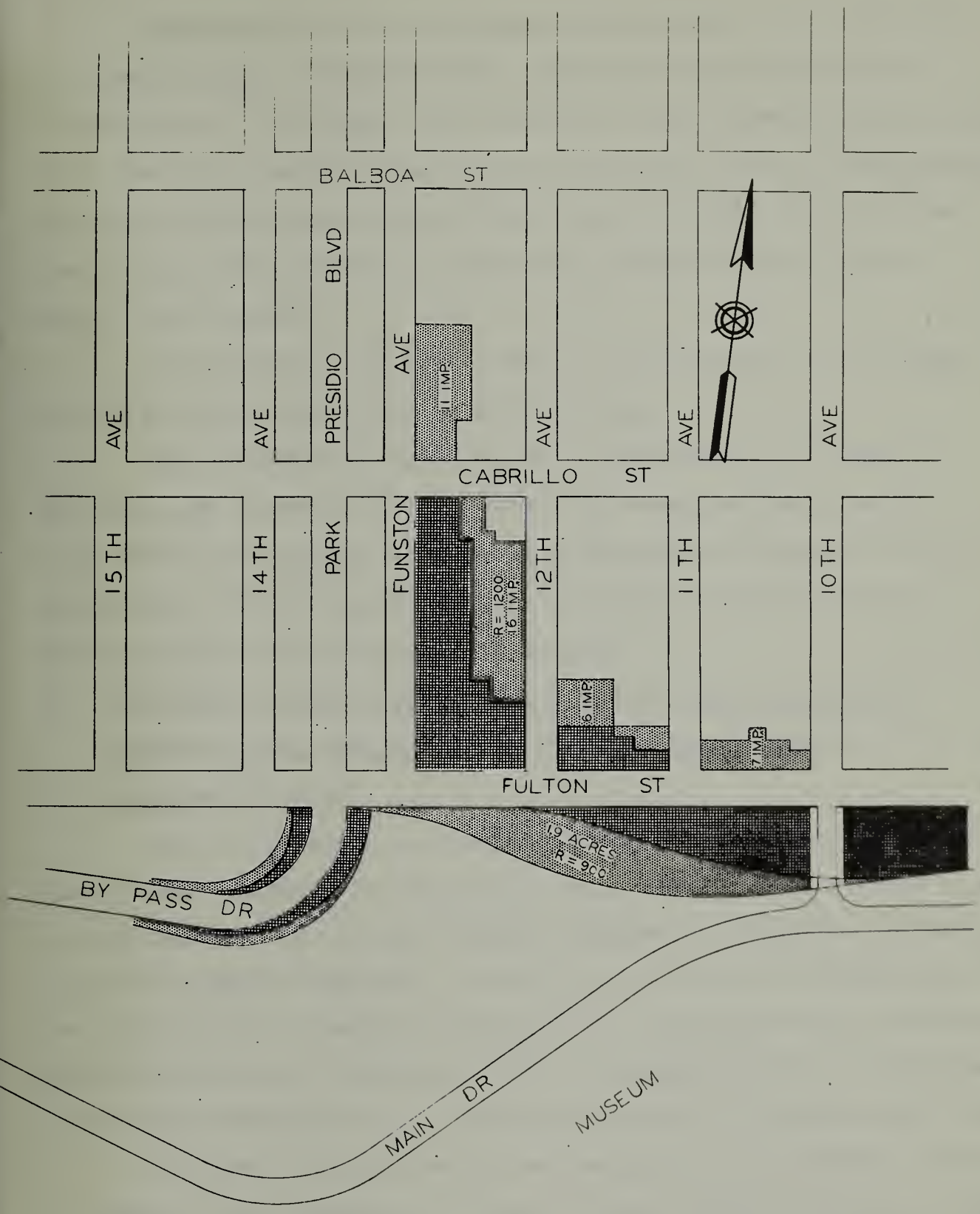
NEW PROPOSALS - PANHANDLE PARKWAY CORRIDOR

A. "Restudy the interchange at Fulton and Park-Presidio Boulevard to minimize property acquisition by means of reduction in design speed."

The design speed for Panhandle Parkway is 50 mph. This is the most liberal interpretation of Federal Minimum Design Standards for Interstate Routes. Centerline radii of at least 1200 feet were used in the original studies.

A radius of 900 feet was investigated for the curve at Fulton Street and Park-Presidio Boulevard. This centerline radius is the minimum acceptable radius for 50 mph, and it was necessary to widen shoulders in the tunnel sections sufficiently to obtain the required horizontal sight distance for the driver in the lane nearest the wall.

An illustration is attached showing the outcome of this study. The cross-hatched areas are required by both designs, the outer shaded areas by one design or the other as noted. The number of improved properties required is also noted for each area.



LEGEND

REQUIRED FOR ℄ RADIUS OF 900' OR 1200'

REQUIRED FOR BOTH

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
DISTRICT 04

R/W REQUIREMENTS
FULTON ST AT
PARK PRESIDIO

Approximately 40 improvements can be saved if a radius of 900 feet is used. These are the properties along the inside of the curve. The total area required by the freeway at this location does not diminish greatly with the lesser radius, and approximately 1.9 additional acres of park land in Heros' Grove must be temporarily disrupted for construction of the freeway in the Radius 900 location.

Approximately 131 trees are in this area and 111 of these can be boxed and saved during construction.

The temporary disruption can be reduced in this area by shifting the westbound Fulton Street off-ramp east to a point near Third Avenue where additional disruption to the park is more acceptable. Traffic service to points west of Park-Presidio Boulevard would be reduced by this shift.

B. "Restudy possible separate Oak and Fell Street depressed roadways using vertical walls along the Panhandle." (Alternative F-3)

This alternative is a variation of Plan F presented in 1964. The freeway roadways are depressed under Oak and Fell Streets along the Panhandle with the city streets carried on cantilever structures over the freeway roadways. A tunnel is used under Fillmore Hill, and the freeway is depressed between the tunnel and the cantilever sections along the Panhandle. The interchange layout at Divisadero Street was modified to fit the lower location of Fillmore Hill Tunnel.

Vertical retaining walls were added to the Panhandle section to replace the landscaped 1:1 slope in the original version. Approximately 1.7 acres of park land can be saved.

The use of continuous full-height retaining walls to contain the freeway while preserving park land for local residents sacrifices the drivers' outlook and is not in keeping with the parkway concept of this route. Some varying treatment of full walls, partial walls, and landscaped slopes would be most desirable from the point of view of both the motorist and the adjacent community.

Advantages, in addition to preserving additional park land, include a low improvement count and a location between the existing Oak-Fell one-way couplet for easier ramp connections.

Disadvantages include costly R/W requirements in terms of the Panhandle area required, loss of many large trees along the edges of the Panhandle with resultant reduction in quality of visual outlook for adjacent residents, and inconvenience to adjacent property owners and the motorist while the cantilever section is under construction.

The estimated cost of this alternative is $80.8 million (Construction $42.4 million, R/W $38.4 million). It requires 264 improvements having an assessed valuation of $1.7 million.

C. "Investigate the effect of the elimination of certain ramps or combinations of ramps."

The Study Committee has concluded that elimination of any ramps included in the original studies would degrade local traffic service out of proportion to benefits gained.

D. "Prepare study for a bored tunnel under Fillmore Hill".

Several geometric layouts and grade-line possibilities were given to the City's tunnel consultant, Jacobs Associates, establishing the limits of the Fillmore Hill Tunnel Study.

The consultant is considering a bored tunnel extending 1620 feet west from Webster Street to a point west of Pierce Street. The remainder of the block between Pierce and Scott Streets is being considered as a cut-and-cover tunnel. The bored tunnel section adds approximately $17.0 million to the cost of cut-and-cover freeway construction estimates in this corridor. The lower grade line for the bored section makes necessary the additional length of cut-and-cover construction between Pierce and Scott Streets.

The cut-and-cover tunnel previously studied requires acquisition of approximately one-half block between Webster and Pierce Streets which includes improvements valued at approximately $4.2 million. Following construction of the tunnel, the area over the tunnel may be developed and returned to the tax rolls.

The bored tunnel requires acquisition of underground easements for the full width of the block. The right-of-way costs shown on the attached Evaluation Chart reflect the above conditions.

Please refer to Jacobs Associates' report for information developed during their studies.

The State's study for a tunnel in this location in 1964 indicated that a tunnel could be bored only under the most ideal and carefully controlled conditions and not without some risk to the stability of improvements above the tunnel.

E. "Study the Route 80-101 interchange near Laguna Street and possible joint use therein."

A 1" = 50' scale geometric layout was furnished to the City's housing consultant, Hal Dunleavy and Associates, for use in this phase of the study. Mr. Dunleavy's report will contain joint-use possibilities in this area.

F. Variations of Alternatives Previously Studied

Alternative "G-1" (8 lanes)

This is a normal side-by-side depressed freeway down the center of the Panhandle Park with portions covered to allow park use above the freeway. East of Baker Street this alternative is similar to "F-3".

The estimated cost of Alternative G-1 is $63.5 million (Construction $31.2 million, R/W $32.3 million). It requires 256 improvements having an assessed valuation of $1.5 million.

Advantages of construction centered in the block include saving of the large trees along the edge of the Panhandle which preserves visual qualities, retention of the functional use of the park areas, unlimited access to park areas, and virtually no inconvenience to adjacent residents or the motorist during construction because normal construction procedures can be used.

Disadvantages include high cost and, perhaps, some driver discomfort while adjusting to the alternating open and closed sections.

See the attached exhibit for an aerial view of this location.

Alternative "G-2" (8 lanes)

This alternative is similar to "G-1" but utilizes a fully ventilated cut-and-cover tunnel in the Panhandle Park. The only open uncovered section would be in the block between Cole and Clayton Streets where the Stanyan Street ramps join the freeway.

The estimated cost of Alternative G-2 is $69.1 million (Construction $39.8 million, R/W $29.3 million). It requires 256 improvements having an assessed valuation of $1.5 million.

The restoration of a maximum of the Panhandle is its only additional advantage over G-1.

Disadvantages include high cost and the usual attendant psychological, operational and maintenance problems of long tunnels and the necessity of locating ventilation buildings in the Panhandle. If this alternative is connected to a fully covered Golden Gate Park alternative, the tunnel would be approximately 1.7 miles long with only a 500-foot uncovered section where ramps to Stanyan Street join the freeway.

Alternative "H-2" (6 lanes)

The freeway roadways are side by side under the northeast corner of the park in a cut-and-cover tunnel to Arguello Boulevard. Along the north edge of the park the westbound direction of the freeway is under Fulton Street and the eastbound direction is located side by side just inside the north property line of the park. Both directions are cut-and-cover construction all the way to Park-Presidio Boulevard.

The estimated cost of this 6-lane H-2 design is $45.4 million (Construction $40.8 million, R/W $4.6 million). It requires 14 improvements having an assessed valuation of $0.1 million.

Advantages include ease of construction, minimum interference with park activities, and construction in an area of the park that needs some redesign for maximum utility.

Disadvantages include high cost, inconvenience to property owners along Fulton Street during construction, and long tunnels for the driver.

Alternative "J-2" (6 lanes)

This alternative is double-deck, 6-lane freeway, under the Main Drive corridor in Golden Gate Park. It was proposed by the consulting architects.

The estimated cost of this alternative is $37.6 million (Construction $35.7 million, R/W $1.9 million). It requires 14 improvements having an assessed valuation of $0.1 million.

Advantages include lower cost, a superior alignment, minimum disruption of planted areas in the park, a location away from local residents which would allow a 2- or 3-shift operation during construction, and virtually no inconvenience to local residents.

Disadvantages include inconvenience to park users during construction and some construction difficulty because of depth of construction required in such limited work areas.

Alternative "K" (6 lanes)

Separate freeway roadways are placed in different locations to avoid extensive damage to any one area. The westbound roadway would be in tunnel under the northeast corner of the park. West of Arguello Boulevard it would lie entirely within Fulton Street with Fulton Street replaced on structure over the depressed freeway roadway. East-bound traffic would be placed in a cut-and-cover tunnel under Main Drive in the park. West of Eighth Avenue both roadways are in a cut-and-cover tunnel through a developed area of the park.

The estimated cost of this alternative is $43.3 million (Construction $38.8 million, R/W $4.5 million). It requires 23 improvements having an assessed valuation of $0.1 million.

Advantages include flexibility of construction operations, distribution of construction impact between the park and the surrounding community, and a variety of driving conditions for the westbound motorist.

Disadvantages include high cost, a long tunnel for the east-bound motorist and inconvenience to residents along Fulton Street. The separate roadways, while spreading out the construction to involve more area, would probably allow construction to proceed more quickly in each area. There is a chance, however, that all construction might be scheduled at the same time to complete the project by 1972. Some inconvenience to the motorist would result if both Main Drive and Fulton Street were closed to traffic at the same time.

NEW PROPOSALS - GOLDEN GATE FREEWAY CORRIDOR

The Division of Highways, in accordance with the agreement entered into with the City of San Francisco, has studied the new proposals described below. All studies except Alternative FW utilize eight-lane freeway sections and the same interchange patterns as Alternative F,F-5, the plan recommended by the State Highway Engineer.

A description and brief discussion of each of the new proposals studied follows below:

A. "Investigate the feasibility of the plan described in Board of Supervisors' Resolution No. 475-65 excepting provision 3 thereof relating to phasing out of the Embarcadero Freeway." This plan is designated as Alternative FT.

FT drops to a depressed section along the Embarcadero at a 5% grade. As it reaches Francisco Street it divides into three tubes, one each passing under Bay, North Point and Beach Streets. The tunnels under Bay and Beach Streets are three-lane, one-directional freeway sections. The tunnel under North Point Street is two-lane and the direction of travel is reversible, to accommodate peak-hour traffic. The roadways recombine into a conventional depressed freeway section in Fort Mason, pass through the southwest corner of the Gashouse Cove Yacht Harbor and under Marina Boulevard in a cut-and-cover tunnel. Connection to the Golden Gate Bridge Approach is made with a depressed interchange.

The plan as developed by the San Francisco Chamber of Commerce also would eliminate access to the dwellings along Marina Boulevard during construction. However, the plan can be modified

to conform to any other alternative west of Van Ness Avenue which would eliminate this problem.

This plan is the same as that described in the Board's Resolution No. 475-65 except that an interchange is provided near Columbus Avenue. The Study Committee has concluded that an interchange at this location is necessary to provide acceptable traffic service.

The estimated cost of this alternative is $311.9 million (Construction $232.1 million, R/W $79.8 million). Valuation of property permanently removed from City tax rolls is assessed at $0.5 million.

Between the Embarcadero and Van Ness Avenue the street width building face to building face is 68 feet. Width required for the tunnel sections under Bay and Beach Streets is a minimum of 53 feet, which allows a maximum of only 7.5 feet on each side for utility relocation and working space. It has been suggested by the developers of this plan that the "Milan Process" of construction be used. This consists of trenching the tunnel side walls to full depth and holding the hole open with Bentonite slurry. Reinforcing is placed in the trench and the mud is displaced with concrete. A top beam and slab is then poured and finally the material is excavated from within the structure and the remaining horizontal slabs are poured.

Two other more conventional methods of construction also have been considered. With the first method, drilled hole, cast-in-place piles are poured at close intervals to support the side walls, and transverse beams are placed at ground level to connect

pairs of piles and support a surface roadway. The material enclosed by the piles and beams is then removed. The side wall space between piles and the horizontal slabs are then poured to complete the structure.

The third method involves driving sheet piling, excavating the material within the piling, then pouring the base slab, vertical walls and the remaining horizontal slabs.

Two advantages cited for use of the "Milan Process" are that time of construction is relatively short and that the surface roadway can be replaced in service quickly.

Ground water conditions are so adverse throughout the construction area that it is doubted that either the "Milan Process" or the drilled hole, cast-in-place pile method can be successfully applied.

This study is based on use of the sheet piling method. Since the sheet piling must be driven very close to the face of the building, vibration may cause some structural damage and the noise level will be high.

An additional problem caused by construction within these streets is that access for fire protection services is severely impaired during construction within any block. This could create a potentially disastrous fire hazard. Also danger of vandalism to the evacuated buildings would be very great.

Because of problems inherent in the construction method, narrow side clearances and the probability that domestic utility service cannot be maintained during the construction period, it is assumed that residents must be temporarily relocated. This

factor plus potential structural damage tend to make right-of-way costs high for this alternative. The apparent low assessed valuation reflects the fact that 247 of the 289 parcels affected can be returned to the tax rolls after construction is completed.

Traffic problems created, if this alternate is constructed, take two forms. During construction the only three through streets in this area would be unuseable as major traffic carriers. Vehicles needing to use the corridor during the peak hours would create almost intolerable traffic congestion since construction of each of the tunnels must occur simultaneously to meet Interstate program deadlines.

Traffic predictions indicate that the three-lane tube functioning in the direction opposite peak hour travel would be operating near or at critical capacity.

In addition, a proposal was made to consider two four-lane tunnels to be located under Bay and North Point Streets. A detailed study of this possibility has not been made because there is only 68 feet between building faces and, since each tunnel is a minimum of 65 feet wide, it is not practical to construct by conventional methods without permanent acquisition of rights of way. While this plan would overcome the traffic deficiencies inherent in the three-tube plan, it would retain all the worst elements of disruption inherent in the three-tube plan.

B. "Investigate an alternate northeasterly of the North Point Sewage Plant." This plan is a modification of Alternative F-2 and is designated as Alternative F-2-A.

F-2-A drops to a depressed section along the Embarcadero at a 5% grade. It passes east of the North Point Sewage Treatment Plant, then swings west around the plant between North Point and Beach Streets. Alternative F-2-A remains between these streets to near Mason Street where it veers southerly and conforms to Alternative F near Jones Street.

F-2-A generally is west of the Embarcadero and does not require modification of San Francisco Port Authority piers.

The estimated cost of this alternative is $102.6 million (Construction $70.3 million, R/W $32.3 million). Acquisition of 110 improvements, assessed at $2.3 million would be required.

The primary advantages of this plan are that it avoids damage to the Bakar development of the former Simmons Mattress Company property and does not cut diagonally across the area immediately north of the existing Broadway ramps. Also, the plan is compatible with existing water front activities and development, yet permits freedom of choice for future water front improvement, since the freeway is partially or completely covered from northeast of Lombard Street to east of Grant Street.

The chief disadvantage is that access between that area east of Telegraph Hill and the Embarcadero is restricted from Vallejo to Lombard Streets, as the freeway transitions from an elevated to a depressed gradeline.

C. "Investigate a new depressed design for the F Line east of Columbus Avenue to provide for more efficient use of air rights." Two design variations of Alternative F (east) have been developed and are designated as Alternatives FC and FD.

FC follows the alignment of F (east) utilizing independent roadways for each direction of travel, with one roadway in a depressed section and the other on a ground-level viaduct directly above. The profile for the top level is approximately 22 feet lower than for Alternative F (east) and would allow more efficient joint use of rights of way than F.

The estimated cost of this alternative is $108.1 million (Construction $60.3 million, R/W $47.8 million). Acquisition of 134 improvements, assessed at $2.5 million would be required.

FD also follows the alignment of F (east) but uses a side-by-side depressed freeway section north and west of Sansome Street.

The estimated cost of this alternative is $117.3 million (Construction $63.8 million, R/W $53.5 million). Acquisition of 154 improvements, assessed at $3.4 million would be required.

While this alternative would require more right of way than either F or FC, it would allow the most efficient development of the joint-use concept.

Both FC and FD reduce visual impact from Telegraph Hill, especially if possible joint use of air space is exploited.

D. "Investigate the effect of eliminating the on-off ramps near Columbus Avenue."

Traffic studies indicate that the freeway operational characteristics would probably be somewhat improved by elimination of the interchange near Columbus Avenue, since freeway volumes east of Van Ness Avenue would be lower. However, this would be accomplished at the expense of approximately 45,000 vehicles per day which desire to use this interchange. Most of the trips originating in San Francisco and routed through this interchange would be transferred to the City streets, because of congestion on adjacent ramps and the added circuity of their trips.

The study team has tentatively agreed that none of the interchanges shown on our original studies should be eliminated.

E. "Further studies of air rights between Van Ness Avenue and Columbus Avenue."

Additional study of joint use of air rights was made. It was determined that the entire section between Columbus and Van Ness Avenues could be placed in cut-and-cover tunnel at an additional cost for construction of $3,400,000. This would allow for a complete re-use of the area. If coverage were limited to 50% of the area within a given block or if continuous tunnels were limited to 600 feet or less, ventilation could be eliminated and the unit cost of the structure would decrease.

F. "Investigate the general merits of the Aquatic Freeway plan."

The general merits of the Aquatic Freeway plan suggested by Design Consultants, Inc., a private firm, have been investigated and the plan is designated as Alternative FW.

FW follows the alignment of Alternative F-2A to near the Sewage Treatment Plant. It remains just west of the Embarcadero to near Jefferson Street, where it passes under the Embarcadero and enters the water. It passes under Pier 45 and passes outboard of the Municipal Pier and the Marina Yacht Harbor jetty in a subaqueous tube. It emerges near Crissy Field in the Presidio and conforms to the Golden Gate Bridge approach near the Route 280/480 junction.

The plan suggested by Design Consultants, Inc., utilizes a double-deck tube with the top of the structure above the water surface except where access to boat moorage areas is necessary. Because of the limited distances between these areas, the proposed rolling profile could not be achieved in a satisfactory manner. When the profile was worked out in detail it was found that only 1000 feet of the tube could be above water level east of the Marina Yacht Harbor entrance. Approximately 1500 feet of the tube would be less than fifteen feet below the surface in this area. The invisibility of the structure as it transitions above and below the surface, coupled with the short exposed section, would create a serious hazard to all boats and ships using the area.

West of the Marina Yacht Harbor entrance the top of the double-decked tube could be brought above the water surface; however this would create several difficult construction problems. If the structure is above the water surface, it essentially will

become a sea-wall. It will be exposed to high velocity tidal currents which would cause a heavy overturning moment. The foundation for the structure would have to be specially designed to resist this action. The structure also would be vulnerable to boats or ships cast adrift in this area. Great difficulty probably would be experienced in floating the high-sided structure into place in the face of these currents and then settling it on its foundation.

For the above reasons, the study developed by the State holds the top of the structure below the sea floor through most of its length. A side-by-side section is used to minimize the depth of dredging required to place the structure and to minimize the effects of the very high-velocity currents in the area.

Interchanges are provided only at the Route 280/480 junction and near Broadway. The State does not find it practical to provide interchange service comparable to the other alternatives studied. The costs to provide this local service would be very high because of the difficulty of constructing underwater interchanges and long approach tunnels. Relatively few city residents would use the intermediate interchanges because of the added circuity of their trips. The plan, therefore, primarily would serve Marin County residents.

This plan, relative to other alternatives investigated, would not offer traffic relief and resulting freedom of movement on the city streets in the corridor. For the costs involved, more than $250 million, the plan does not offer the traffic service that should be expected from an expenditure of this magnitude.

If the interchanges are provided, two additional freeway lanes would be required and the costs would increase out of proportion to the additional service gained.

This plan utilizes a continuous tunnel approximately 3.4 miles in length. This long underwater tunnel location probably will constitute a severe psychological barrier to many persons who might otherwise use the route.

This type of construction also would accrue very heavy costs for maintenance and surveillance. Access to the sites of accidents and or fires would be very difficult.

The only advantages of this plan are that it requires very little right of way and it is out of public view through most of its length.

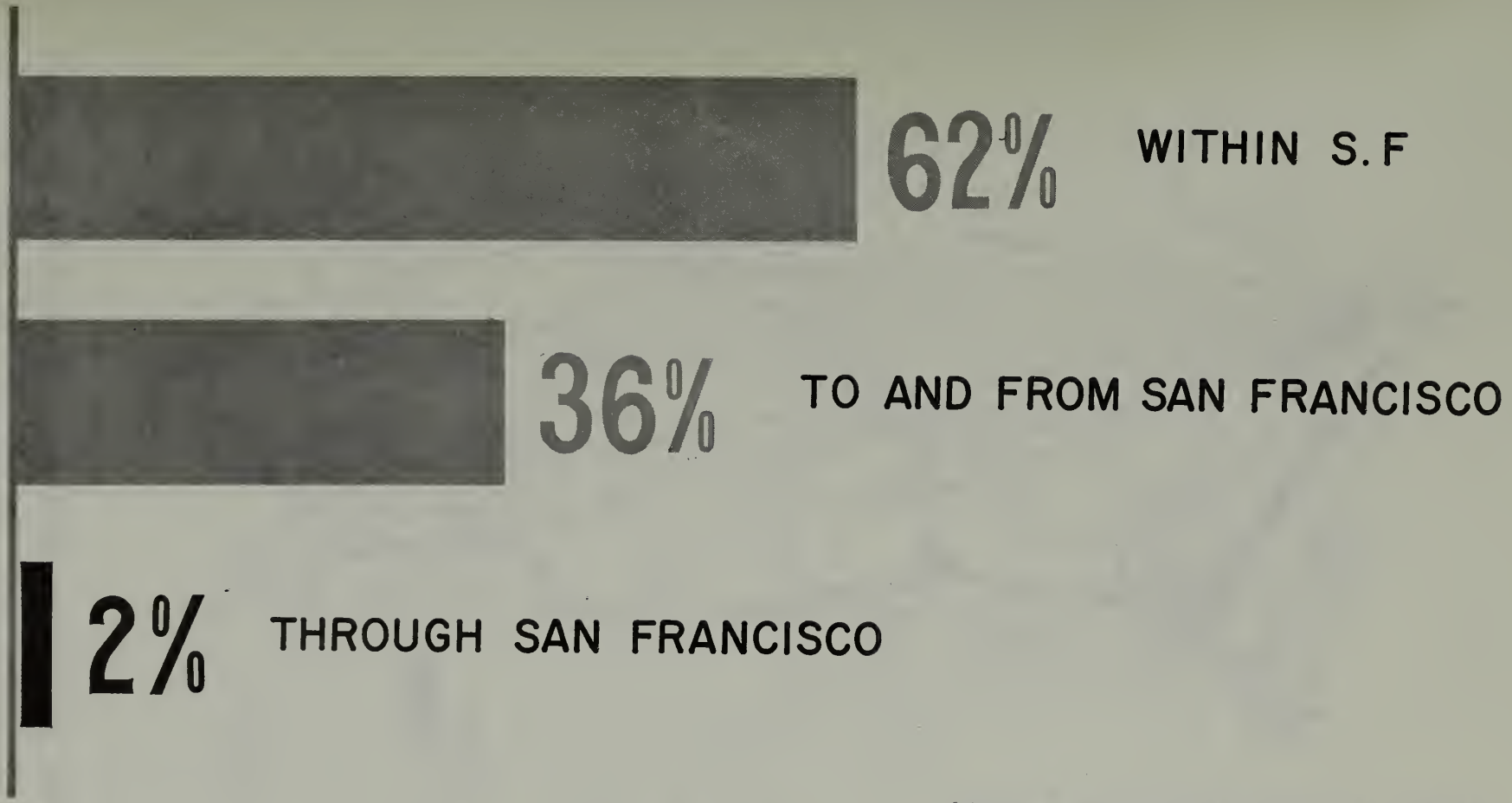
G. Variations of Alternatives Previously Studied.

Alternative F (west) shown on the March 1965 Location Map is moved northeasterly between Gough and Fillmore Streets to avoid the Safeway property bounded by Laguna, Beach, Buchanan and North Point Streets. This revision would require minor readjustment of the Gashouse Cove Yacht Harbor.

Alternative F-4 shown on the March 1965 Location Map is modified in the same manner. This plan passes completely under the Marina Green and beneath the bottom of the Marina Yacht Harbor in a cut-and-cover tunnel. It allows a complete restoration of the area after construction.

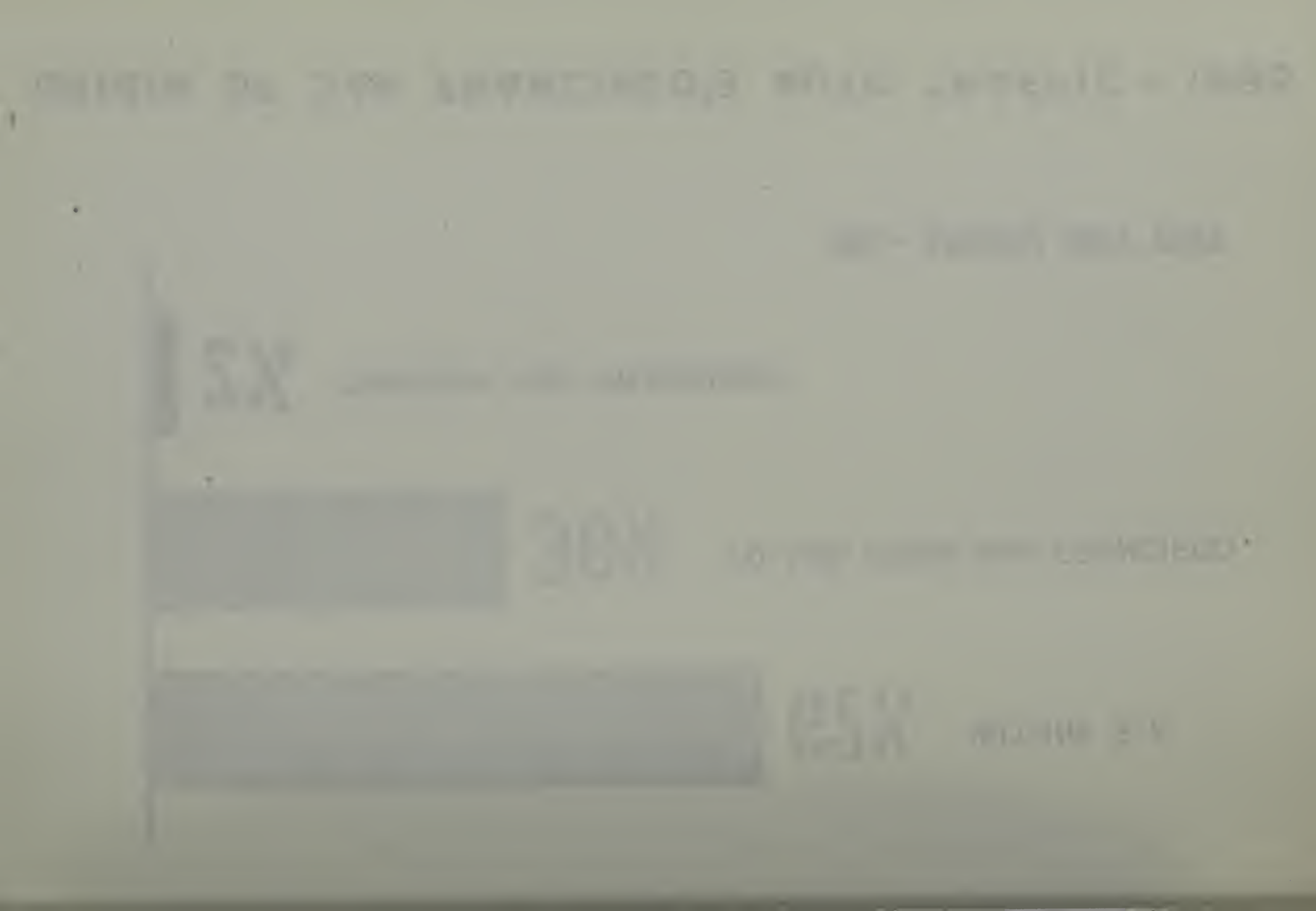
Alternative F-4C is a variation of F-4. It is a cut-and-cover tunnel between the same limits but utilizes a higher grade-line. The top of the tunnel passes approximately three feet

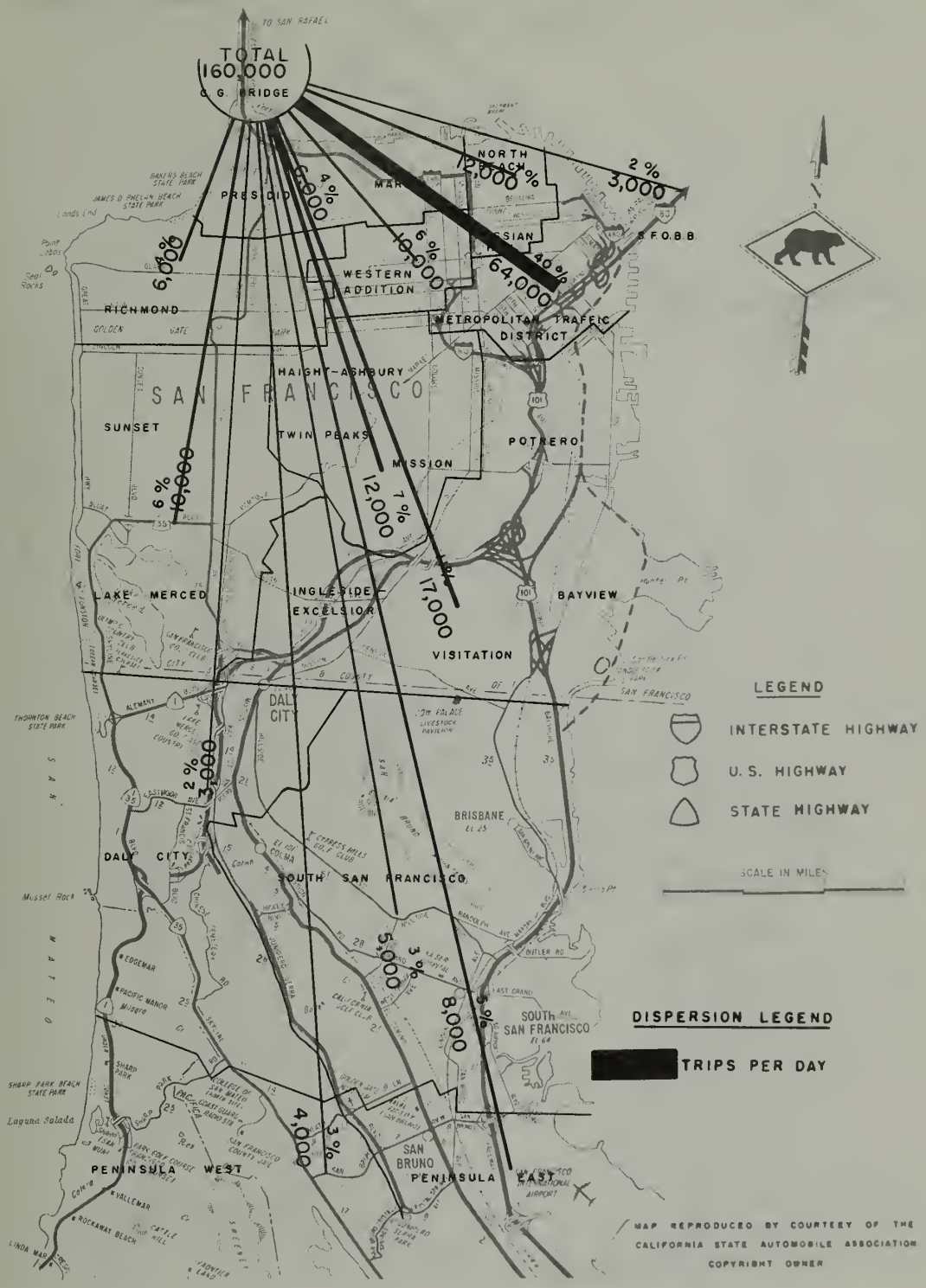
below the surface of the Marina Green and is slightly above the surface of the Marina Yacht Harbor. It would require relocation of the Yacht Harbor berths adjacent to Marina Boulevard. This area would be replaced as an extension of the Marina Green and the boat berths would be relocated in the revised Gashouse Cove Yacht Harbor.



1985 • 2,000,000 DAILY TRIPS

ORIGIN OF SAN FRANCISCO'S AUTO TRAFFIC – 1985





1985 GOLDEN GATE BRIDGE TRAFFIC DISPERSION

PANHANDLE PARKWAY LOCATION MAP

LEGEND
ooooo STRUCTURE
—— GRADED
- - - - TUNNEL

LOOKING NORTHEAST ALONG THE PANHANDLE CORRIDOR, GOLDEN GATE PARK IN FOREGROUND

LEGEND
GRADED
TUNNEL

LOOKING WEST AT GOLDEN GATE PARK, PANHANDLE IN FOREGROUND

GOLDEN GATE FREEWAY
LOCATION MAP — MARCH 1965

GOLDEN GATE FREEWAY
LOCATION MAP – FEBRUARY 1966

LEGEND

oooo STRUCTURE

——— GRADED

- - - - TUNNEL

LOOKING WEST
EMBARCADERO IN FOREGROUND

LEGEND
——— GRADED
---- TUNNEL

LOOKING EAST
PALACE OF FINE ARTS IN FOREGROUND

ALTERNATIVE	LENGTH (miles)	CONSTRUC-TION	RIGHT OF WAY	TOTAL	20-YR. USER SAVINGS $ Millions	BENEFIT RATIO	RESIDEN-TIAL IMPROVE-MENTS	TOTAL IMPROVE-MENTS	ASSESSED VALUE $ Millions	ALTERNATIVE
E-1 c & c	1.8	20.1	37.2	57.3*			447	487	2.5	E-1 c & c
F-3 c & c	1.8	42.4	38.4	80.8			225	264	1.7	F-3 c & c
F-3 bore	1.8	58.6	35.2	93.8			163	196	1.2	F-3 bore
G-1 c & c	1.8	31.2	32.3	63.5			220	256	1.5	G-1 c & c
G-1 bore	1.8	50.4	30.8	81.2			163	196	1.2	G-1 bore
G-2 c & c	1.8	39.8	29.3	69.1			220	256	1.5	G-2 c & c
G-2 bore	1.8	57.2	28.2	85.4			163	196	1.2	G-2 bore
H-2 6-lane R-900	0.9	40.8	4.6	45.4			14	14	0.1	H-2 6-lane R-900
H-2 8-lane R-1200	0.9	42.1	5.2	47.3			26	26	0.1	H-2 8-lane R-1200
K 6-lane R-1200	0,9	38.8	4.5	43.3			23	23	0.1	K 6-lane R-1200
K 8-lane R-1200	0.9	43.2	4.9	48.1*			23	23	0.1	K 8-lane R-1200
J-2 6-lane R-900	0.9	35.7	1.9	37.6			14	14	0.1	J-2 6-lane R-900
J-2 8-lane R-900	0.9	42.1	2.2	44.3			14	14	0.1	J-2 6-lane R-900
L-3 R-1200	1.8	18.6	7.0	25.6*			49	49	0.2	L-3 R-1200
L-3 R-900	1.8	18.6	5.8	24.4			18	18	0.1	L-3 R-900
E-1,K,L-3*	4.5	81.9	49.1	131.0*	129	1.0	519	559	2.8	E-1,K,L-3*

Alternative Column
c & c (cut and cover) or bore refer to the Fillmore Hill Tunnel. All other tunnels are cut and cover. Radii are for the curve at Fulton and Park-Presidio Boulevard.

Bored tunnel construction costs by consultant.
Panhandle section costs include $12 million for extension of Central Freeway under Van Ness Avenue.
Tree-moving costs and special retaining wall costs included in construction costs.

*STATE HIGHWAY ENGINEER'S RECOMMENDED ALTERNATIVE 1964

LAND USE AND TREE SUMMARY
(Land Areas in Acres)

Alternative	LAND USE DATA				TREE DATA	
	Areas returnable to tax rolls after construction	Park land permanently required	Additional park land needed during construction	Permanent easements through park land for tunnels	Total Involved	Trees Lost
E-1* c & c	7.1	1.6	0	0.3	40	16
F-3 c & c	6.0	9.7	0	1.0	300	174
F-3 bore	3.4	9.7	0	1.0	300	174
G-1 c & c	6.0	8.0	0	9.4	320	191
G-1 bore	3.4	8.0	0	9.4	320	191
G-2 c & c	6.0	3.7	0	12.7	300	180
G-2 bore	3.4	3.7	0	12.7	300	180
H-2 6-lane R-900	0	0.3	0.6	11.7	1643	387
H-2 8-lane R-1200	0.2	0.1	0.7	12.4	1880	480
K 6-lane R-1200	0	0.1	0.5	8.0	819	203
K* 8-lane R-1200	0.2	0.3	0.5	10.2	1120	245
J-2 6-lane R-900	0	0.2	1.2	7.1	596	124
J-2 8-lane R-900	0	0.3	1.2	9.0	670	144
L-3* R-1200	0.3	10.4	7.1	0	1310	324
L-3 R-900	0	10.8	6.8	0	1302	327

*State Highway Engineer's Recommended Route 1964

Alternative	Useable Panhandle Areas Remaining after Construction (Baker to Stanyan Streets)		
	Level useable park area	Area available by narrowing Oak & Fell	Total useable area**
F-3	15.5	0	15.5
G-1	15.1	3.0	18.1
G-2	19.0	3.0	22.0

**Existing Panhandle has 22.6 acres of useable area.

EVALUATION CHART
(Golden Gate Freeway)

ALTERNATIVE	LENGTH (miles)	COST IN MILLIONS			USER CONSIDERATIONS		COMMUNITY VALUES			ALTERNATIVE
		CONSTRUC-TION	RIGHT OF WAY	TOTAL	20 YR. USER SAVINGS $ Millions	BENEFIT RATIO	RESIDEN-TIAL IMPROVE-MENTS	TOTAL IMPROVE-MENTS	ASSESSED VALUE $ Millions	
F,F-5*	3.6	62.0	47.5	109.5	120	1.1	84	134	2.5	F,F-5*
F-2A, F-5	3.7	70.3	32.3	102.6	120	1.2	66	110	2.3	F-2A, F-5
FC, F-5	3.6	60.3	47.8	108.1	120	1.1	74	134	2.5	FC, F-5
FD, F-5	3.6	63.8	53.5	117.3	120	1.0	83	154	3.4	FD, F-5
		COST DIFFERENCES FOR VARIATIONS WEST OF VAN NESS AVENUE								
F (West)		+22.1	-3.4	+18.7	0	-0.2	0	0	0	F (West)
F-4		+67.9	-1.3	+66.6	0	-0.5	0	0	0	F-4
F-4C		+37.9	+0.5	+38.4	0	-0.3	0	0	0	F-4C
		COST FOR PLAN REQUESTED BY BOARD OF SUPERVISORS RESOLUTION NO. 475-65								
FT**	3.7	232.1	79.8	311.9	120	0.4	***	***	0.5	FT**

*State Highway Engineer's recommended alternative, 1965

**City and County of San Francisco - Resolution No. 475-65

***289 improvements required, 247 improvements returned to tax rolls after construction completed, 42 improvements permanently off tax rolls.

G G PARK LIMIT
G G PARK
FULTON ST
3 LANE
3 LANE
STA +22+00
Ground Line
TUNNEL
TUNNEL
0.15%
2%
2.2%
0.15%
0.2%
0.15%
0.2%
6%
6%
6%
6%
3%
1%
250
300
350
400
410
420
430
440
450
500
510
9TH AV
8TH AVE
7TH AVE
6TH AVE
5TH AVE
4TH AVE
3RD AVE
2ND AVE
ARGUELLO BL.
WILLARD ST.
H-2
F-3
ST. MARYS HOSPITAL
DE YOUNG MUSEUM
CONSERVATORY
DRIVE
MAIN
PARK
GOLDEN GATE
KEZAR
KEZAR STADIUM
STANYAN
SHRADER
COLE
RK'FREDRIC BYPASS DR.
SAN

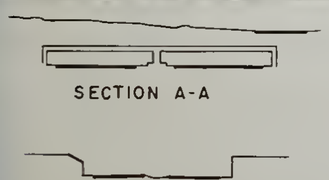
Ground Line
Fell St.
Oak St.
2%
1.0%
6%
5%
1%
5.4%
4%
4.7%
3.8%
0.7%
530
540
550
560
570
580
OAK ST
FELL ST
PANHANDLE
4-LANE
4-LANE
STA 525+00
FULTON
GROVE
HAYES
FELL
OAK
PAGE
HAIGHT
ALAMO SQUARE
S.H. CHURCH
S.F. HOSPITAL
BUENA VISTA PARK
CIVIC CENTER
CENTRAL FREEWAY
MARKET
CENTRAL FREEWAY
OCTAVIA
GOUGH
FRANKLIN
VAN NESS
POLK
LAGUNA
BUCHANAN
WEBSTER
FILLMORE
PIERCE
SCOTT
DIVISADERO
BROderick
BAKER
LYON
MASONIC
CENTRAL
STANYAN
FULTON
HIGH
PAGE
HAYES
GROVE
Legend—
FREEWAY
STRUCTURE
TUNNEL
RAMP
FRONTAGE ROAD
VENT. BLDG.
DIVISION OF HIGHWAYS
ALTERNATIVE F3,H2
80
3349.00

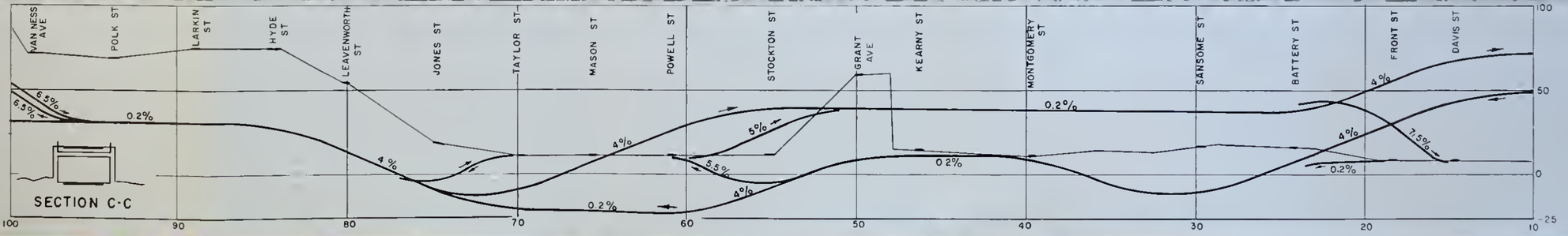
CABRILLO
410
A
420
A
ELM
GOLDEN
GATE
PA
J-2
J-2
GROVE
HAYES
FELL
510
B
B
PAGE
3 LANE
4 LANE
4 LANE
4 LANE
ANE
ION A-A
SECTION B-B
SECTION C-C

ALAMO SQUARE
BUENA VISTA PARK
FELL ST
OAK ST
HAIGHT
PAGE
MARKET
CENTRAL FREEWAY
ONE WAY TO ALAMEDA
530
520
- Legend -
FREEWAY
STRUCTURE
TUNNEL
RAMP
FRONTAGE ROAD
VENT. BLDG.
STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
DISTRICT 04
ALTERNATIVE G-2, J-2
DRAWN BY
DATE FEB. 1966
CHECKED BY
SCALE 1" = 500'
FILE NO
SOURCE
CO
RTE
DR. NO
SF
80
3349.00

FULTON
3-LANE
GOLDEN GATE PARK
MAIN DR
3-LANE
FULTON ST
MAIN DRIVE
MAIN DRIVE
FULTON ST
TUNNEL
0.25%
1%
2%
5%
6%
4%
2.5%
0.2%
300
250
200
400
410
420
430
440
448+70
500
—Legend—
FREEWAY
STRUCTURE
TUNNEL
RAMP
FRONTAGE ROAD
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
DISTRICT IV
ALTERNATIVE K
DRAWN BY HE
DATE FEB. 1966
CHECKED BY RCC
SCALE 1" = 500'
FILE NO
DR NO 135
FILE
CO SF
RTE 80
SEC SF
PROJ NO 334900
DEPT D
KEZAR STADIUM
GOLDEN GATE PARK
HAIGHT
ASHBURY
PAGE
HAYES
GROVE
FULTON
OAK
LAUREL
KEZAR DR

PLAN F
SCALE IN FEET
0
500
— Legend —
FREEWAY
STRUCTURE
TUNNEL
VENTILATION BLDG.
RAMP
STREET CONSTRUCTION
RIGHT OF WAY
DIRECTION OF TRAVEL
FISHERMAN'S WHARF
AQUATIC PARK
FORT MASON
U.S. MILITARY RESERVATION
JEFFERSON ST
BEACH ST
NORTH POINT ST
NORTH POINT SEWAGE TREATMENT PLANT
THE EMBARCADERO
NORTH WATERFRONT AREA
FRANCISCO JUNIOR HIGH SCHOOL
BAY ST
FRANCISCO ST
RESERVOIR
GALILEO HIGH SCHOOL
VAN NESS AVE
POLK ST
LARKIN ST
HYDE ST
MASON ST
TAYLOR ST
POWELL ST
STOCKTON ST
GRANT AVE
CHESTNUT ST
LOMBARD ST
GREENWICH ST
FILBERT ST
LEAVENWORTH ST
JONES ST
SARAH COOPER SCHOOL
NORTH BEACH PLAYGROUND
COLUMBUS AVE
WASHINGTON SQUARE
TELEGRAPH HILL
GARFIELD SCHOOL
KEARNY ST
MONTGOMERY ST
SANSOME ST
BATTERY ST
FRONT ST
UNION ST
GREEN ST
VALLEJO ST
DAVIS ST
NESS AVE
A
B
C
F EAST


SECTION A-A
SECTION B-B
SECTION C-C


VAN NESS AVE
POLK ST
LARKIN ST
HYDE ST
LEAVENWORTH ST
JONES ST
TAYLOR ST
MASON ST
POWELL ST
STOCKTON ST
GRANT AVE
KEARNY ST
MONTGOMERY ST
SANSOME ST
BATTERY ST
FRONT ST
DAVIS ST
6.5%
6.5%
0.2%
4%
4%
5%
5.5%
4%
0.2%
0.2%
4%
7.5%
0.2%
100
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-25
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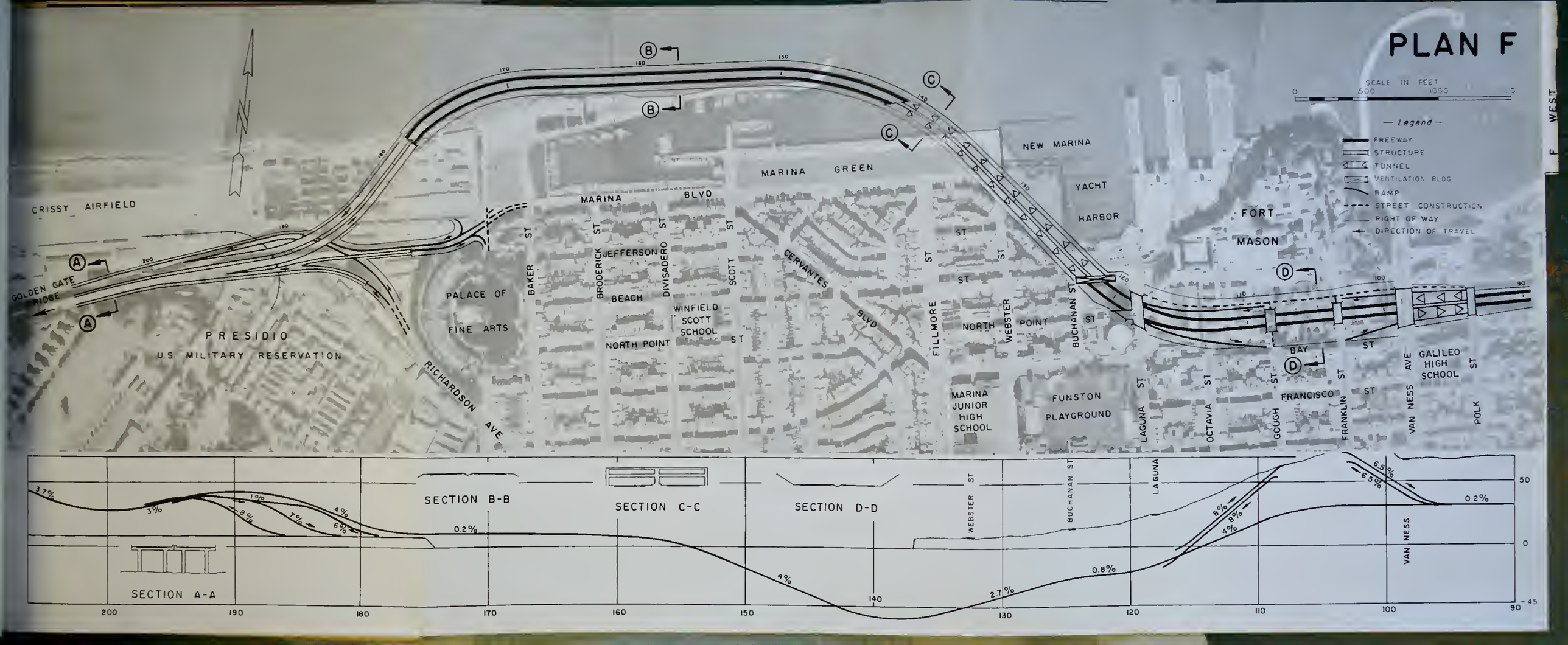
80
70
60
50
40
30
20
10


PLAN F
SCALE IN FEET
0
500
1000
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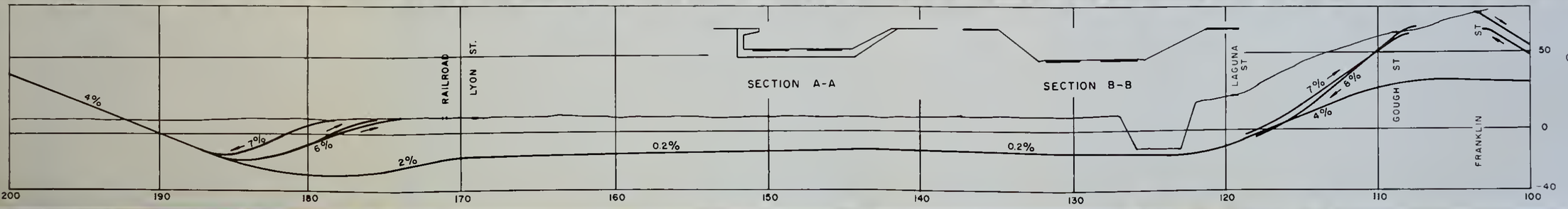
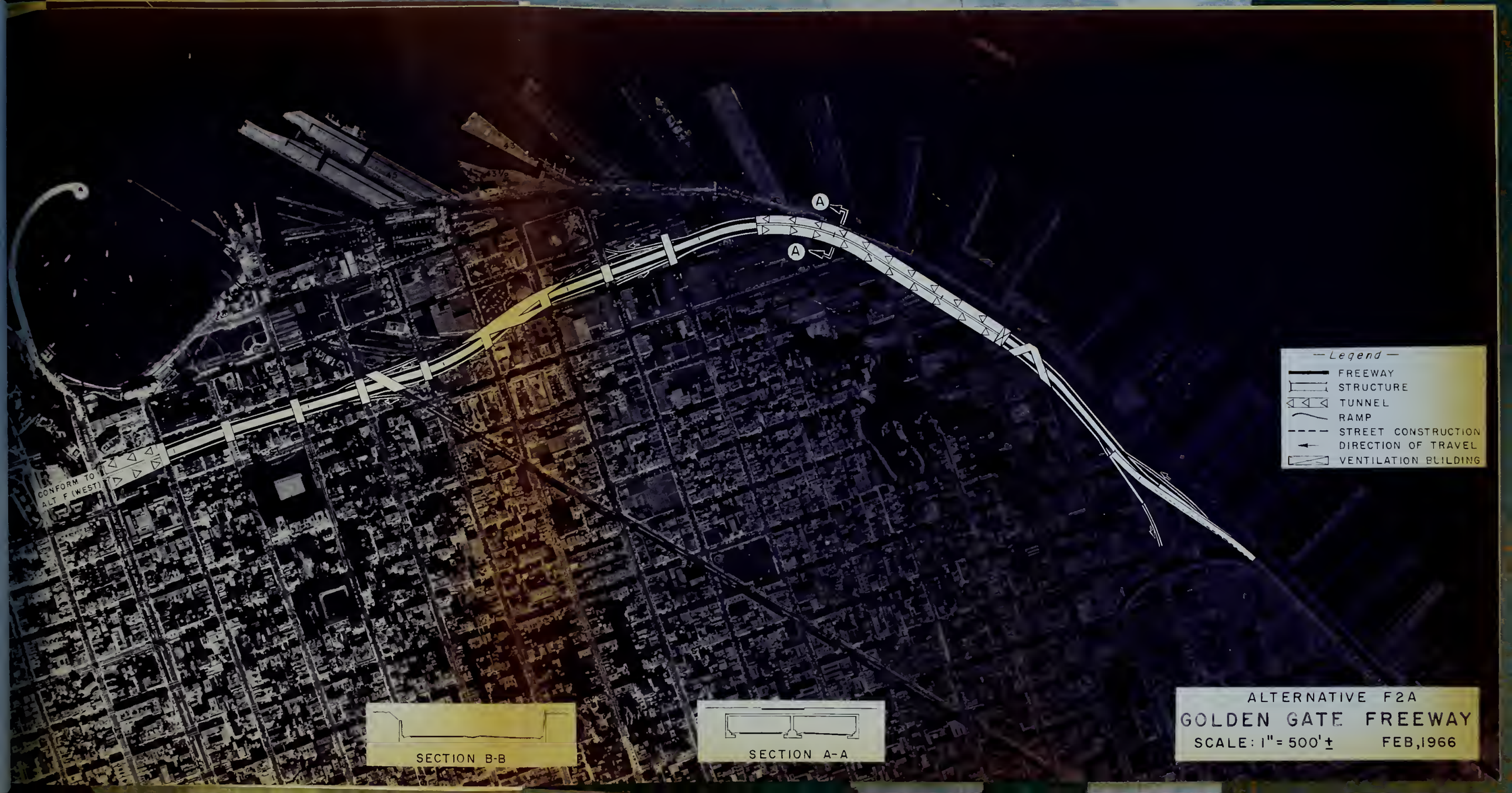
FREEWAY
STRUCTURE
TUNNEL
VENTILATION BLDG
RAMP
STREET CONSTRUCTION
RIGHT OF WAY
DIRECTION OF TRAVEL
CRISSY AIRFIELD
GOLDEN GATE BRIDGE
PRESIDIO
U.S. MILITARY RESERVATION
PALACE OF FINE ARTS
RICHARDSON AVE
MARINA GREEN
MARINA BLVD
BAKER ST
BRODERICK ST
JEFFERSON ST
DIVISADERO ST
SCOTT ST
BEACH
NORTH POINT
WINFIELD SCOTT SCHOOL
CERVANTES BLVD
FILLMORE ST
MARINA JUNIOR HIGH SCHOOL
NEW MARINA YACHT HARBOR
WEBSTER ST
BUCHANAN ST
FUNSTON PLAYGROUND
FORT MASON
BAY
FRANCISCO ST
LAGUNA ST
OCTAVIA ST
GOUGH ST
FRANKLIN ST
VAN NESS AVE
GALILEO HIGH SCHOOL
POLK ST
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
3.7%
3%
10%
8%
7%
6%
4%
0.2%
4%
2.7%
0.8%
8%
8%
4%
6.5%
6.5%
0.2%
200
190
180
170
160
150
140
130
120
110
100
90
50
0
-45

PLAN F-5

SCALE IN FEET
0 500 1000 500
— Legend —
FREEWAY
STRUCTURE
TUNNEL
VENTILATION BLDG
RAMP
STREET CONSTRUCTION
RIGHT OF WAY
DIRECTION OF TRAVEL
GOLDEN GATE BRIDGE
PRESIDIO
U.S. MILITARY RESERVATION
PALACE OF FINE ARTS
RICHARDSON AVE
LYON ST
BAKER ST
BRODERICK ST
DIVISADERO ST
SCOTT ST
CERVANTES BLVD
FILLMORE ST
WEBSTER ST
BUCHANAN ST
MARINA BLVD
JEFFERSON ST
NORTH BEACH
POINT
WINFIELD SCOTT SCHOOL
MARINA JUNIOR HIGH SCHOOL
FUNSTON PLAYGROUND
BAY
FRANCISCO ST
PEDESTRIAN CROSSING
NEW MARINA YACHT HARBOR
FORT MASON
LAGUNA ST
OCTAVIA
GOUGH
FRANKLIN
CHESTNUT
FRANCISCO
VAN NESS AVE
POLK
GALILEO HIGH SCHOOL
CONFORMS TO PLAN F
A
B
F-5


RAILROAD
LYON ST.
SECTION A-A
SECTION B-B
LAGUNA ST
GOUGH ST
FRANKLIN
4%
7%
6%
2%
0.2%
0.2%
7%
6%
4%
200
190
180
170
160
150
140
130
120
110
100
50
0
-40
CONFORMS TO PLAN F

A
A
SECTION A–A
Legend
FREEWAY
STRUCTURE
TUNNEL
RAMP
STREET CONSTRUCTION
DIRECTION OF TRAVEL
VENTILATION BUILDING
ALTERNATIVE FT
GOLDEN GATE FREEWAY
SCALE: 1" = 500' ±
FEB, 1966


A
A
CONFORM TO ALT F (WEST)
— Legend —
FREEWAY
STRUCTURE
TUNNEL
RAMP
STREET CONSTRUCTION
DIRECTION OF TRAVEL
VENTILATION BUILDING
SECTION B-B
SECTION A-A
ALTERNATIVE F2A
GOLDEN GATE FREEWAY
SCALE: 1" = 500' ±
FEB, 1966

Legend
FREEWAY
STRUCTURE
TUNNEL
RAMP
DIRECTION OF TRAVEL
STREET CLOSURE
SECTION A-A
A
A
CONFORM TO ALT F (EASTERN)
ALTERNATIVE FC
GOLDEN GATE FREEWAY
SCALE: 1" = 500' ±
FEB, 1966

A
A
SECTION A-A
Legend
FREEWAY
STRUCTURE
TUNNEL
RAMP
STREET CONSTRUCTION
DIRECTION OF TRAVEL
STREET CLOSURE
ALTERNATIVE FD
GOLDEN GATE FREEWAY
SCALE: 1" = 500'±
FEB, 1966

MODIFICATION OF PLAN F

—Legend—

TUNNEL

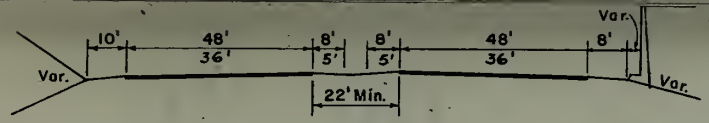
STREET CONSTRUCTION

VENTILATION BUILDING

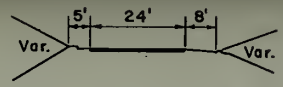
GOLDEN GATE FREEWAY

SCALE 1" = 500' ±

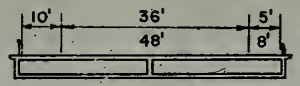
FEB, 1966



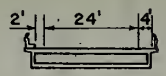
GRADED FREEWAY



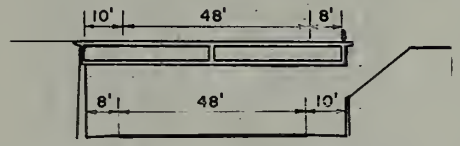
GRADED RAMP



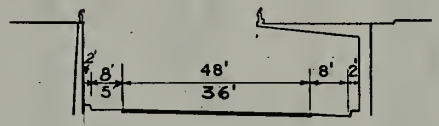
FREEWAY STRUCTURE
(ONE DIRECTION)



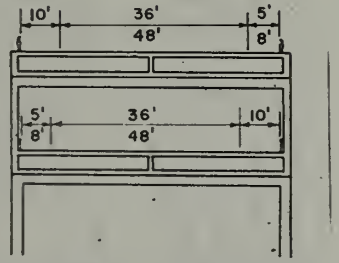
RAMP STRUCTURE



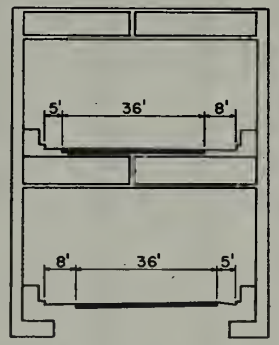
SEPARATED ROADWAYS



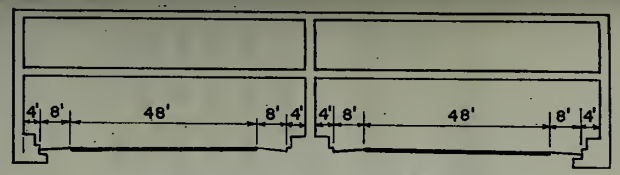
GRADED FREEWAY
(WITH CITY STREET OVERHEAD)



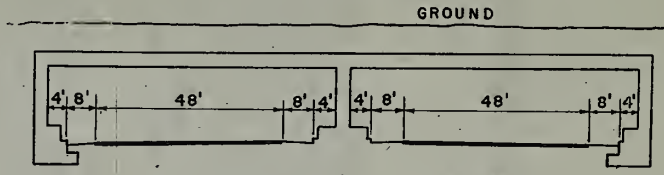
FREEWAY STRUCTURE



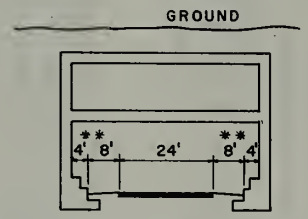
CUT & COVER TUNNEL
6 LANES



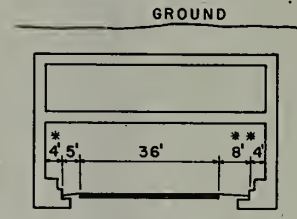
CUT & COVER TUNNEL
(WITH VENTILATION DUCT)
8 LANES



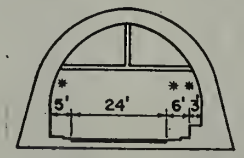
CUT & COVER TUNNEL
8 LANES



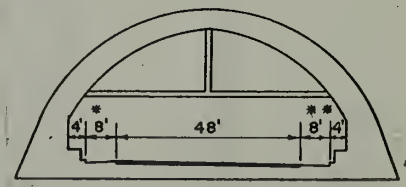
CUT & COVER TUNNEL
(2 LANES REVERSIBLE)



CUT & COVER TUNNEL
(3 LANES ONE DIRECTION)



TUNNEL RAMP



BORED TUNNEL
(ONE DIRECTION)

NOTE: * Minimum side clearance 4½'
** Minimum side clearance 6'
All retaining walls may be stepped or set back for aesthetic treatment.
Typical sections not to scale.

TYPICAL CROSS SECTIONS

04107 - 334900
4-SF-80,280,480

RESTUDY OF GOLDEN GATE AND PARK PRESIDIO-PANHANDLE FREEWAYS TRAFFIC PROJECTIONS

INTRODUCTION

This study represents a refinement and review of several previous traffic projections for the Golden Gate (Route 480) and Park Presidio-Panhandle (Routes 80-280) freeways in San Francisco made by the California Division of Highways. It is primarily based on planning data supplied by the San Francisco City Planning Department with respect to the future development of the City. Other agencies have also contributed data.

All aspects of this traffic review have been done with the assistance, advice, suggestions and full cooperation of the staff of the Traffic Division, Bureau of Engineering, Department of Public Works of the City and County of San Francisco.

No new freeway locations were included in this study. Rather, we have examined the effects of providing either or both freeways and of deleting certain interchange ramps from the two previously proposed freeways.

The traffic projections have been developed for each of two conditions:

(1) Assuming that the Golden Gate Bridge remains essentially as it now exists

(2) Assuming that the Golden Gate Bridge will be double-decked.

These two possibilities, together with 27 combinations of freeway and ramp configurations, provided a total of 54 alternates.

Following is a detailed description of the basic data used to develop the projected traffic volumes for each plan together with a discussion of several of the more feasible ones.

A. TRIP GENERATION

The restudy of future traffic projections on the two proposed freeways took the following factors into consideration: population growth, employment growth, the growth of automobile ownership, the growth of automobile usage and the extent of public transit patronage. Each of these factors is expanded upon below.

The traffic projections are based on a gravity model analysis. The San Francisco model is based on the above noted factors which were furnished by the City as well as others. For study purposes, the area included a portion of the San Mateo peninsula. It was divided into 135 zones, each zone being composed of a single land use.

1. Population

The population of San Francisco was 775,000 in 1950, 740,000 in 1960 and is approximately 750,000 today (January 1966). The projection for 1985 is 812,000.

2. Employment

Employment projections indicate an increase of 17% from 464,000 in 1960 to 542,000 in 1985.

3. Automobile Ownership

In 1960 there were approximately 330,000 vehicles registered in San Francisco. This is a relatively low ratio of 0.45 vehicles per person as compared to the State-wide average of 0.55 vehicles per person. The projection for 1985 is based on 0.58 vehicles per person for a total of 470,000 motor vehicles in San Francisco. The State-wide registration ratio in 1985 has been projected to be 0.61. It should be noted that the 1965 registration ratio for San Francisco has already risen to 0.50 vehicles per person.

4. Automobile Usage

This study assumes that overall vehicle usage in trips per person will increase at about the same rate as the vehicle registration rate. It is our considered opinion that this assumption is on the conservative side.

5. Mass Transit Patronage

The total usage of mass transit into and within San Francisco has shown a gradual decline since the end of World War II. This is typical of cities throughout the United States. Our future projections take into account diversion of commuter traffic to Rapid Transit, as estimated by Transit officials, and a general stabilization of patronage of local transit.

B. TRIP DISTRIBUTION

The above information was used as input data to develop the anticipated total number of trips. These were then processed mathematically by use of the District 4 Traffic Model (a traffic model is a series of mathematical equations) to determine the number of trips which will originate and end between each pair of the zones noted above. This calculation was performed for both 1960 and for two conditions in 1985. The 1960 calculation was compared with actual vehicle counts at selected locations and served as a check on the model. The 1985 calculations provided origin and

destination tables for the entire study area if the Golden Gate Bridge remains as it now exists and for a double deck Golden Gate bridge.

Attached are these Origin and Destination Tables between major zone groups for both Golden Gate Bridge conditions. These major zones have been formed by combining the smaller zones in order that tables in a more easily usable size could be presented. The detailed tables are available for those desiring this degree of information.

C. TRIP ASSIGNMENT

The trips between zones, calculated in the previous stage were then assigned by computer methods to the network of freeways and the various local streets under study according to standard Division of Highways methods. This process considers travel time and distance via the freeways and city streets. The result is vehicular volumes for each portion of each traffic artery, projected for the given year.

In addition to trip assignment information, we also have a selected access tabulation. With this, it is possible to determine the origin and destination zones of all increments of traffic passing through any point. By utilizing this information it was possible to project the diversion of traffic from the freeway when certain ramps are omitted. For example, when a given pair of ramps is omitted, a portion of the traffic formerly using them may use other ramps and a portion will use City streets entirely to complete that trip. This was the method used to analyze the various combinations of freeways when some or all the interchanges are not to be provided.

NETWORKS STUDIED

The generation, assignment and distribution data described above was used for several different network studies. All are based on the same assumptions of future growth. The networks pertinent to this study are as follows:

Network C consists of the Panhandle Freeway only.

Network P consists of the Golden Gate Freeway only.

Network G contains both the Golden Gate and Panhandle freeways. It was developed from Network P.

Network Y consists of the existing and approved freeways and streets, with neither the Panhandle or Golden Gate freeways provided. This was used as the basis for comparison with the other networks.

For purposes of this current study, Network V has been developed which is based on Network G, with the deletion of all or part of four interchanges.

ALTERNATE PLANS STUDIED

Twenty-seven different combinations of freeways and interchanges were studied for the 2 conditions on the Golden Gate Bridge for a total of fifty-four alternates. This was done with the assistance of staff members from the City.

1. Daily Golden Gate Bridge volumes at 116,000 for the existing single deck bridge and daily volumes at 160,000 for a double deck bridge were used. Reconstruction of the bridge to provide this capacity has essentially been approved by the Bridge Board of Directors.

2. The Golden Gate Freeway was studied with five different configurations as follows:

   Alternate 1 - Gough/Franklin and Taylor/Powell ramps provided.

   " 2 - Taylor/Powell ramps deleted.

   " 3 - Franklin and Taylor ramps deleted.

   " 4 - Franklin and Taylor/Powell ramps deleted.

   " 5 - Gough/Franklin and Taylor/Powell ramps deleted.

3. The Panhandle Freeway was studied with four different configurations:

   Alternate A - Stanyan and Divisadero ramps provided.

   " B - Divisadero ramps deleted.

   " C - Stanyan ramps deleted.

   " D - Stanyan and Divisadero ramps deleted.

Traffic projections were developed for each of the 54 alternates and diagrams showing each are attached hereto as exhibits.

After the traffic projection diagrams were completed on all 54 alternates, the effects on traffic service and City street volumes were reviewed by City and State personnel. As a result it was decided to prepare a more thorough analysis of 10 of the more feasible combinations, all with a Golden Gate Bridge volume of 160,000.

They are identified and discussed in more detail later in this report.

SCREEN LINE VOLUMES

The total volume of traffic crossing an arbitrarily located imaginary line, cutting across a corridor, including the freeway and all through city streets is defined as a screenline. It is useful in analyzing the effect of building or not building a particular facility. Attached are tables showing 1985 demand volumes crossing each of four screen lines (2 for each of the proposed freeway corridors) for the 10 selected alternates, as well as the 1985 volumes if no freeway is constructed. Also, included for comparative purposes are current (1963) screenline volumes.

These volumes were compared with proposed street capacities as prepared by the City in order to evaluate the possibilities of carrying the projected traffic on the city streets for each of the 10 alternates and if no facility is constructed. The feasibility of any alternate requires that it must carry the projected volumes on the freeway and city streets. If it is not possible to construct a facility or facilities adequate to carry the volumes, one of two things must then be considered. (1) The volume in excess of capacity will be diverted to another facility or corridor or (2) in the case where this does not provide a reasonable solution it must be inferred that the projected trips will not be made. In the latter case, it could be assumed that this would increase the usage of local transit facilities. However, in the absence of any form of rapid transit in either corridor (none is now under consideration) the only mode available would be surface mass transit. Since this assumption was predicated upon congested conditions, surface transit operation would also be seriously impaired. This then would indicate that the initial assumptions of development, trip generation and trip distribution would be incorrect and the entire projection would have to be redone using lower values for each. A basic assumption in this study was that the same development, generation and distribution factors would be used for all alternates studied.

DISCUSSION OF THE TEN SELECTED ALTERNATES

(1) G-O P-A - Panhandle Freeway only, with Stanyan and Divisadero ramps provided.

This alternate has very high volumes on the Freeway. Congested operation may be expected during peak periods east of Stanyan Street, even with 8 lanes. The City streets in the Panhandle corridor will have to carry about 34% more traffic during peak periods than currently. This would be difficult to achieve. The Marina and North Point Corridors are also left with street volumes about 30% above present volumes. This alternate would provide a freeway route through the city, but would leave impractical volumes on the city streets.

(2) G-0 P-B - Panhandle freeway only, with Divisadero ramps deleted.

Most of the comments under (1) would also apply to this alternate. The freeway operation during peak periods would be somewhat improved due to slightly lower volumes, however, operation would still be congested. Deletion of the Divisadero interchange would result in more trips having to be made on city streets in the Panhandle corridor. This alternate would result in worse congestion on the City's streets and is therefore not considered feasible.

(3) G-1 P-0 - Golden Gate Freeway only, with Gough/Franklin and Taylor/Powell ramps provided.

This alternate would develop a volume of traffic sufficiently large to call for more than 8 lanes on the freeway. The North Point and Panhandle screenlines would have city street volumes well in excess of present volumes. Volumes on city streets would be sufficiently higher than projected capacity to render this alternate unworkable.

(4) G-2 P-0 - Golden Gate Freeway only, with Taylor/Powell ramps deleted.

This plan would have a traffic pattern quite similar to Number (3), except in the vicinity of the deleted ramps. City street operation would be worsened, and freeway operation would not be materially improved.

(5) G-1 P-A Both Freeways, with Gough/Franklin, Taylor/ Powell, Stanyan and Divisadero ramps provided.

Inspection of the Screenline Tabulations shows that this plan provides the greatest reduction in projected City street volumes. It would also yield greatly improved freeway operation as compared to Numbers 1 to 4 above. The two freeways, added to the present system of city streets, give the advantages of the network effect, in which drivers are given a greater range of choice of travel paths throughout the City. This alternate is the best with respect to handling traffic on both the freeways and city streets.

(6) G-2 P-A - Both freeways, with Taylor/Powell ramps deleted.

This plan is nearly as desirable as #5 above and can be considered a feasible alternate. The principal change would be an increase in the Marina and Northpoint screenline street volumes. These volumes would still be within the streets proposed capacities.

(7) G-2 P-B, Both Freeways, with Taylor/Powell and Divisadero ramps deleted.

This plan increases street volumes in the Panhandle corridor, however, it appears that they could be handled with some increase in capacity. This is a feasible alternate from the standpoint of traffic service.

(8) G-4 P-D - Both Freeways, with Franklin, Taylor/Powell Stanyan, and Divisadero ramps deleted.

This plan provides both freeways for the benefit of through traffic, but a minimum of local service. Street volumes at the North Point Screenline are above proposed capacity, and street operation at other locations would be highly congested.

(9) G-5 P-O - Golden Gate Freeway only with Gough/Franklin and Taylor/Powell ramps deleted.

This plan provides minimum local service on the Golden Gate freeway. Freeway volumes are somewhat reduced, but street volumes are above or near possible capacity, thereby rendering this alternate infeasible. Volumes in the Panhandle corridor would be in excess of capacity.

(10) G-5. P-A - Both Freeways, with Gough/Franklin and Taylor/Powell ramps deleted.

This plan adds a full Panhandle Freeway to No. 9 above, hence relieving street traffic conditions in the Panhandle corridor. Street volumes in the Marina and North Point screenlines could be handled by city streets. This is a feasible alternate with respect to handling traffic.

CONCLUSIONS

Referral to the four screen line tables reveals a number of interesting things. First, whenever a freeway is built through a corridor, even one which provides minimum local service, it carries generally more than half of that total corridor volume. This will generally relieve the local streets during off peak periods sufficiently so that they may more efficiently serve their primary purpose - namely to carry neighborhood traffic.

Second, when only one freeway is built, it will be very badly congested during peak periods. The other corridor will also be required to carry very large volumes on the city streets, generally larger than the current volume. As an example in which only the Golden Gate Freeway is built, with all interchanges provided, the Panhandle screenlines indicate street volumes greatly in excess of current, that is 11,200 versus the existing 8,600 near Stanyan Street and 10,700 versus 8,200 near Divisadero Street.

Third, when a pair of ramps or an entire interchange are deleted, both the through and the local movements are affected. Trips which would otherwise use the deleted ramps must do one of three things:

a) Continue along the freeway to the next interchange, then backtrack on City streets. In general a very small percentage of drivers will do this.

b) Shorten their freeway trip by using the preceding interchange before reaching their point of destination. Most long distance trips would choose this alternative.

c) Make the entire trip on city streets. This would be done for short trips, i.e. those which would turn on the freeway at one interchange and off at the next.

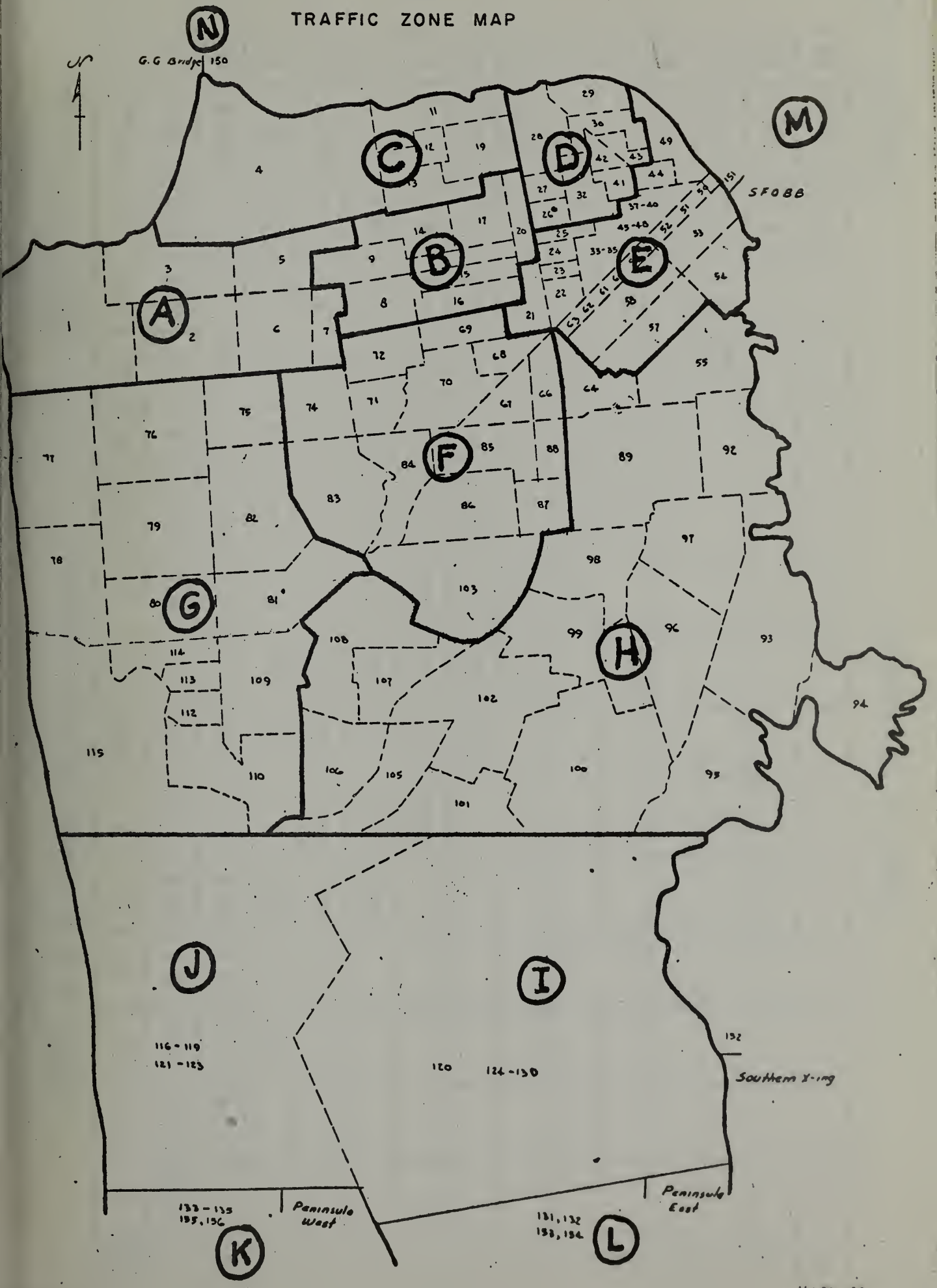
All three of these alternates will add to City street travel, thereby partially defeating the purpose of the freeway.

* * * * * * * *

In Summary this study projects future traffic growth in San Francisco and shows the traffic volumes which will be carried on streets and freeways. In order to carry the anticipated traffic, it will be necessary to have a balanced network of freeways with a compatible system of city streets and transit in service. If any one of the three is not provided, the other two will be congested to such an extent that less than minimal service can be provided during periods of peak requirement. If this occurs it must be expected that San Francisco's future development will be seriously impaired to the detriment of its permanent population.

SAN FRANCISCO STUDY 17

TRAFFIC ZONE MAP



San Francisco Study #17

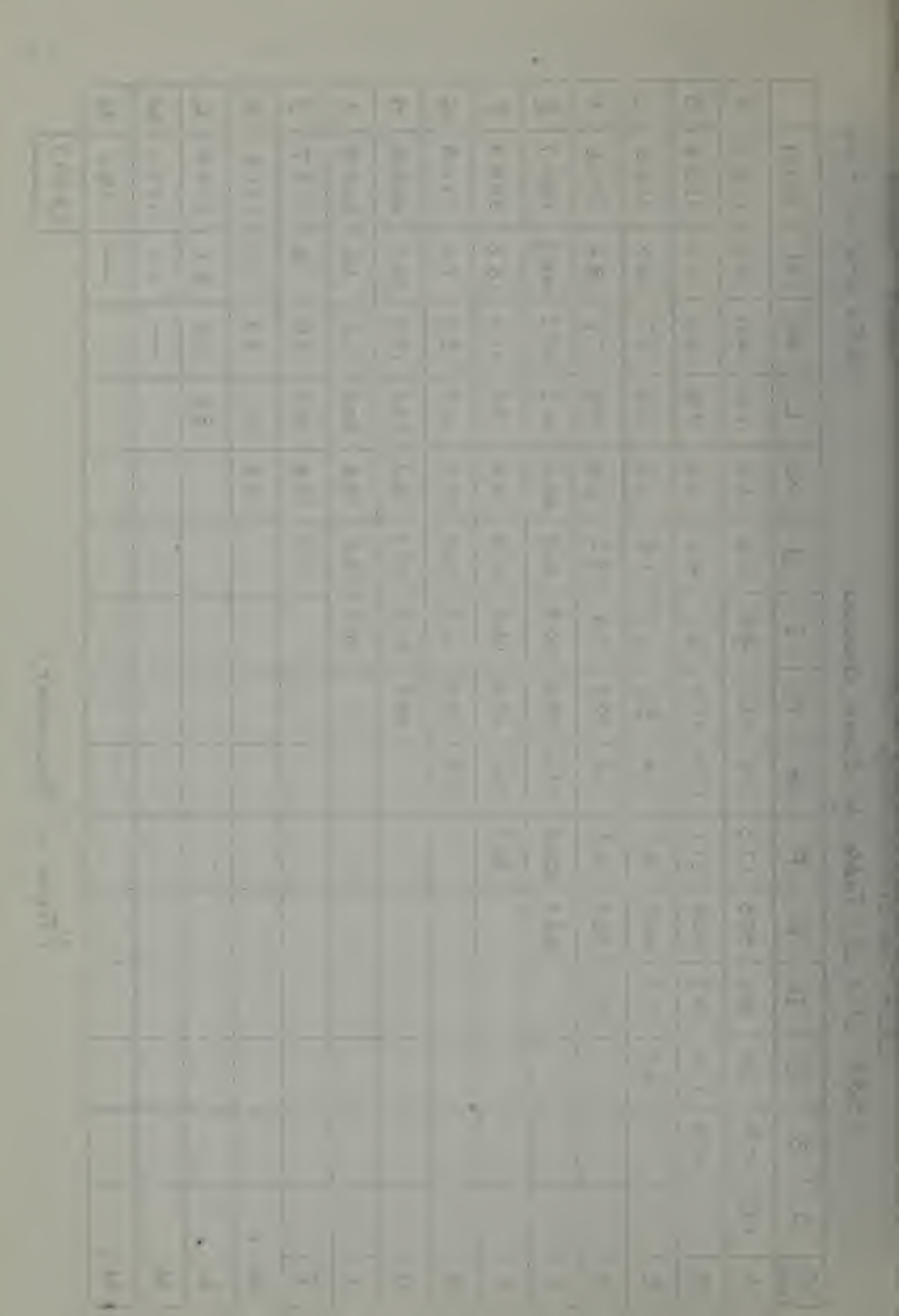
1985 O & D Table by Zone Groups

04107 - 301100

CR file K-4, 11-17-64

To / From	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total	
A	10.6	10.9	5.4	8.8	50.5	17.3	17.0	13.2	4.0	2.6	2.5	7.0	4.8	4.6	159.2	A
B		10.4	11.0	13.7	54.9	21.1	13.5	15.5	6.1	4.0	5.0	7.8	4.9	7.1	185.9	B
C			4.3	12.0	40.9	9.1	6.4	8.6	3.1	1.9	2.3	5.4	3.7	4.5	118.6	C
D				23.1	98.0	16.2	11.6	19.9	7.9	5.2	6.4	9.4	7.2	8.4	247.8	D
E					162.3	106.0	77.2	105.8	50.9	36.5	46.6	61.3	47.2	46.6	984.7	E
F						48.3	33.1	43.0	14.6	10.6	9.9	19.9	11.0	8.8	368.9	F
G							37.2	39.9	16.5	18.7	15.5	20.7	8.3	7.2	322.8	G
H								59.2	33.7	23.3	26.3	49.1	19.3	12.2	469.0	H
I									20.7	18.6	18.9	40.6	1.6	3.6	240.8	I
J										13.5	12.8	20.2	4.0	1.8	173.7	J
K											5.3	12.7	4.3	3.0	171.5	K
L												8.6	6.7	6.2	275.6	L
M													—	2.1	125.1	M
N														—	116.1	N
															3,959.7	

(Trips in Thousands)



Assuming Double-deck Golden Gate Bridge

San Francisco Study #17

1985 O & D Table by Zone Groups

04 - SF - 480
04107 - 301100
CR file K-4,

To / From	A	B	C	D	E	F	G	H	I	J	K	L	M	N	TOTAL	
A	10.6	10.9	5.4	8.8	50.5	17.3	17.0	13.2	4.0	2.6	2.5	7.0	4.8	6.3	160.9	A
B		10.4	11.0	13.7	54.9	21.1	13.5	15.5	6.1	4.0	5.0	7.8	4.9	9.8	188.6	B
C			4.3	12.0	40.9	9.1	6.4	8.6	3.1	1.9	2.3	5.4	3.7	6.2	120.3	C
D				23.1	98.0	16.2	11.6	19.9	7.9	5.2	6.4	9.4	7.2	11.6	251.0	D
E					162.3	106.0	77.2	105.8	50.9	36.5	46.6	61.3	47.2	64.4	1,002.5	E
F						48.3	33.1	43.0	14.6	10.6	9.9	19.9	11.0	12.1	372.2	F
G							37.2	39.9	16.5	18.7	15.5	20.7	8.3	9.9	325.5	G
H								59.2	33.7	23.3	26.3	49.1	19.3	16.8	473.6	H
I									20.7	18.6	18.9	40.6	1.6	4.9	242.1	I
J										13.5	12.8	20.2	4.0	2.5	174.4	J
K											5.3	12.7	4.3	4.1	172.6	K
L												8.6	6.7	8.5	277.9	L
M													—	2.9	125.9	M
N														—	160.0	N
															4,047.5	

(Trips in Thousands)

W

SCREENLINE G-1
MARINA CORRIDOR
Location: East of Fillmore, from Broadway to Marina Boulevard, inclusive

1985 Screenline Volumes in peak direction (P.M. Peak Hour)

	Total (Demand)	Carried on Freeway	Left on Streets
Current (1963)	6,300 (1963)	0	6,300 (1963)
1985, No Freeway	10,400	0	10,400
Study Index No.			
160-0-A	8,300	0	8,300
160-0-B	8,500	0	8,500
160-1-0	12,800	7,600	5,200
160-2-0	12,800	7,600	5,200
160-1-A	11,000	5,800	5,200
160-2-A	11,200	5,700	5,500
160-2-B	11,200	5,800	5,400
160-4-D	11,900	5,800	6,100
160-5-0	11,700	5,400	6,300
160-5-A	10,100	4,100	6,000

SCREENLINE G-2
NORTH POINT CORRIDOR
Location: East of Van Ness Avenue - Broadway to North Point Street, inclusive

1985 Screenline Volumes in peak direction (P.M. Peak Hour)

	Total (Demand)	Carried on Freeway	Left on Streets
Current (1963)	4,900	0	4,900
1985, No Freeway	6,600	0	6,600
Study Index No.			
160-0-A	6,400	0	6,400
160-0-B	6,400	0	6,400
160-1-0	13,600	8,000	5,600
160-2-0	13,400	7,200	6,200
160-1-A	11,800	7,400	4,400
160-2-A	11,000	6,200	4,800
160-2-B	11,000	6,200	4,800
160-4-D	10,100	4,100	6,000
160-5-0	11,700	5,400	6,300
160-5-A	9,500	4,100	5,400

SCREENLINE P-1
PANHANDLE CORRIDOR
Location: East of Stanyan Street-
Haight to Geary Boulevard,
Inclusive

1985 Screenline Volumes in peak direction (P.M. Peak Hour)

	Total (Demand)	Carried on Freeway	Left on Streets
Current (1963)	8,600	0	8,600
No Freeway, 1985	12,800	0	12,800
Study Index No.			
160-0-A	19,400	7,900	11,500
160-0-B	19,200	7,300	11,900
160-1-0	11,200	0	11,200
160-2-0	11,200	0	11,200
160-1-A	16,300	7,900	8,400
160-2-A	16,300	7,900	8,400
160-2-B	16,000	6,800	9,200
160-4-D	15,600	4,500	11,100
160-5-0	11,200	0	11,200
160-5-A	17,000	8,500	8,500

SCREENLINE P-2
PANHANDLE CORRIDOR
Location: East of Divisadero-Haight Street to Geary Boulevard, Inclusive

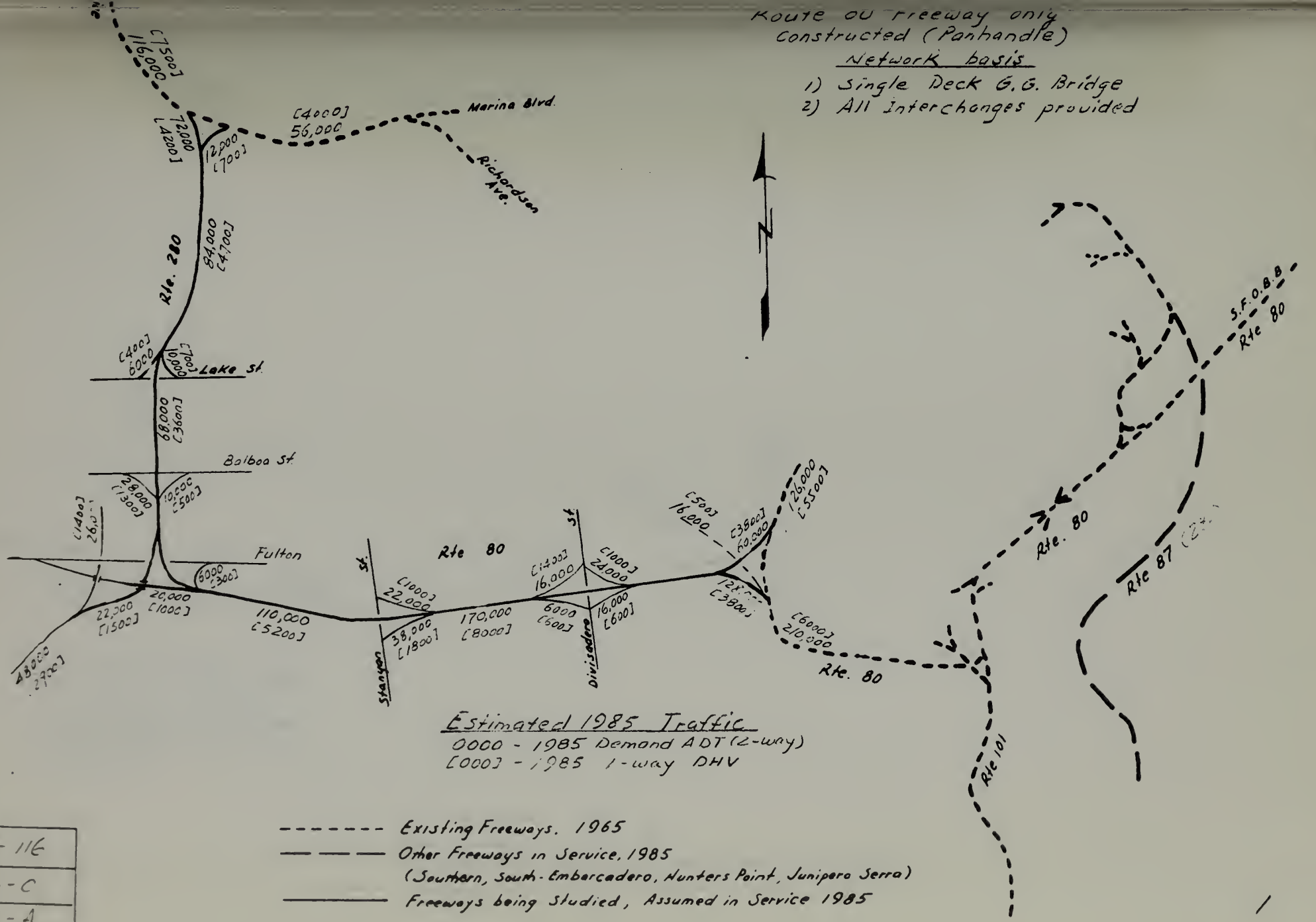
1985 Screenline Volumes in peak direction (P.M. Peak Hour)

	Total (Demand)	Carried on Freeway	Left on Streets
Current (1963)	8,200	0	8,200
No Freeway, 1985	11,900	0	11,900
Study Index No.			
160-0-A	17,200	7,800	9,400
160-0-B	17,000	7,300	9,700
160-1-0	10,700	0	10,700
160-2-0	10,700	0	10,700
160-1-A	14,500	7,600	6,900
160-2-A	14,500	7,600	6,900
160-2-B	14,300	6,800	7,500
160-4-D	14,000	4,500	9,500
160-5-0	10,700	0	10,700
160-5-A	15,200	8,200	7,000

B - 116 Assume Single Deck G.G.Bridge with 1985 ADT 116,000

B
G
P

Page	Code Designation	Route 480 Freeway (Golden Gate)					Route 80 Freeway (Panhandle)			
			(X) Ramps Provided					(X) Ramps Provided		
		Golden Gate Freeway In	Gough	Franklin	Taylor	Powell	Panhandle Freeway In	Stanyan	Divisadero	
1	G-0 P-A	No					Yes	X	X	
2	G-0 P-B	No					Yes	X		
3	G-0 P-C	No					Yes		X	
4	G-0 P-D	No					Yes			
5	G-1 P-0	Yes	X	X	X	X	No			
6	G-2 P-0	Yes	X	X			No			
7	G-3 P-0	Yes	X			X	No			
8	G-4 P-0	Yes	X				No			
9	G-5 P-0	Yes					No			
0	G-1 P-A	Yes	X	X	X	X	Yes	X	X	
1	G-1 P-B	Yes	X	X	X	X	Yes	X		
2	G-1 P-C	Yes	X	X	X	X	Yes		X	
3	G-1 P-D	Yes	X	X	X	X	Yes			
4	G-2 P-A	Yes	X	X			Yes	X	X	
5	G-2 P-B	Yes	X	X			Yes	X		
6	G-2 P-C	Yes	X	X			Yes		X	
7	G-2 P-D	Yes	X	X			Yes			
8	G-3 P-A	Yes	X			X	Yes	X	X	
9	G-3 P-B	Yes	X			X	Yes	X		
0	G-3 P-C	Yes	X			X	Yes		X	
1	G-3 P-D	Yes	X			X	Yes			
2	G-4 P-A	Yes	X				Yes	X	X	
3	G-4 P-B	Yes	X				Yes	X		
4	G-4 P-C	Yes	X				Yes		X	
5	G-4 P-D	Yes	X				Yes			
6	G-5 P-A	Yes					Yes	X	X	
7	G-5 P-D	Yes					Yes			


Route 80 freeway only constructed (Panhandle)
Network basis
1) Single Deck G.G. Bridge
2) All Interchanges provided
[7500] 116,000
72,000 [4200]
[4000] 56,000
Marina Blvd.
12,000 [700]
Richardson Ave.
Rte. 280
84,000 [4700]
[400] 6000
[700] 10,000
Lake St.
68,000 [3600]
Balboa St.
28,000 [1300]
10,000 [500]
[1400] 26,000
Fulton
6000 [300]
20,000 [1000]
22,200 [1500]
110,000 [5200]
[1000] 22,000
38,000 [1800]
Stanyan
Rte 80
170,000 [8000]
[1400] 16,000
[1000] 24,000
6000 [600]
16,000 [600]
Divisadero
[500] 16,000
[3800] 140,000
126,000 [5500]
12X [3800]
[6000] 210,000
Rte. 80
Rte 101
S.F.O.B.B.
Rte 80
Rte. 80
Rte 87
Estimated 1985 Traffic
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV
Existing Freeways. 1965
Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being Studied, Assumed in Service 1985

E-116
G-C
E-A

Route 80 Freeway only constructed (Panhandle)

Network basis

1) Single Deck G.G. Bridge
2) No Divisadero Interchange provided

Estimated 1985 Traffic

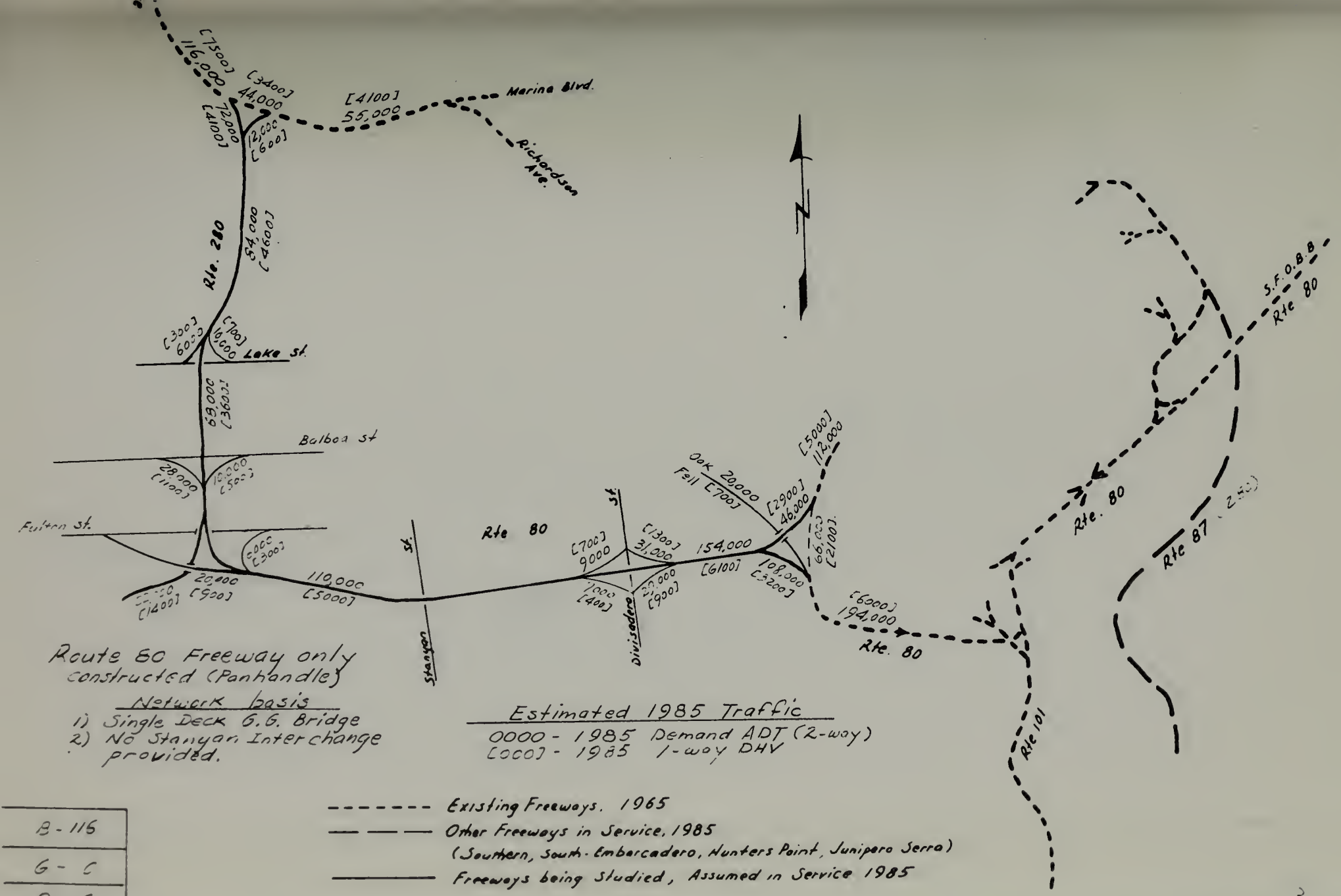
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being Studied, Assumed in Service 1985

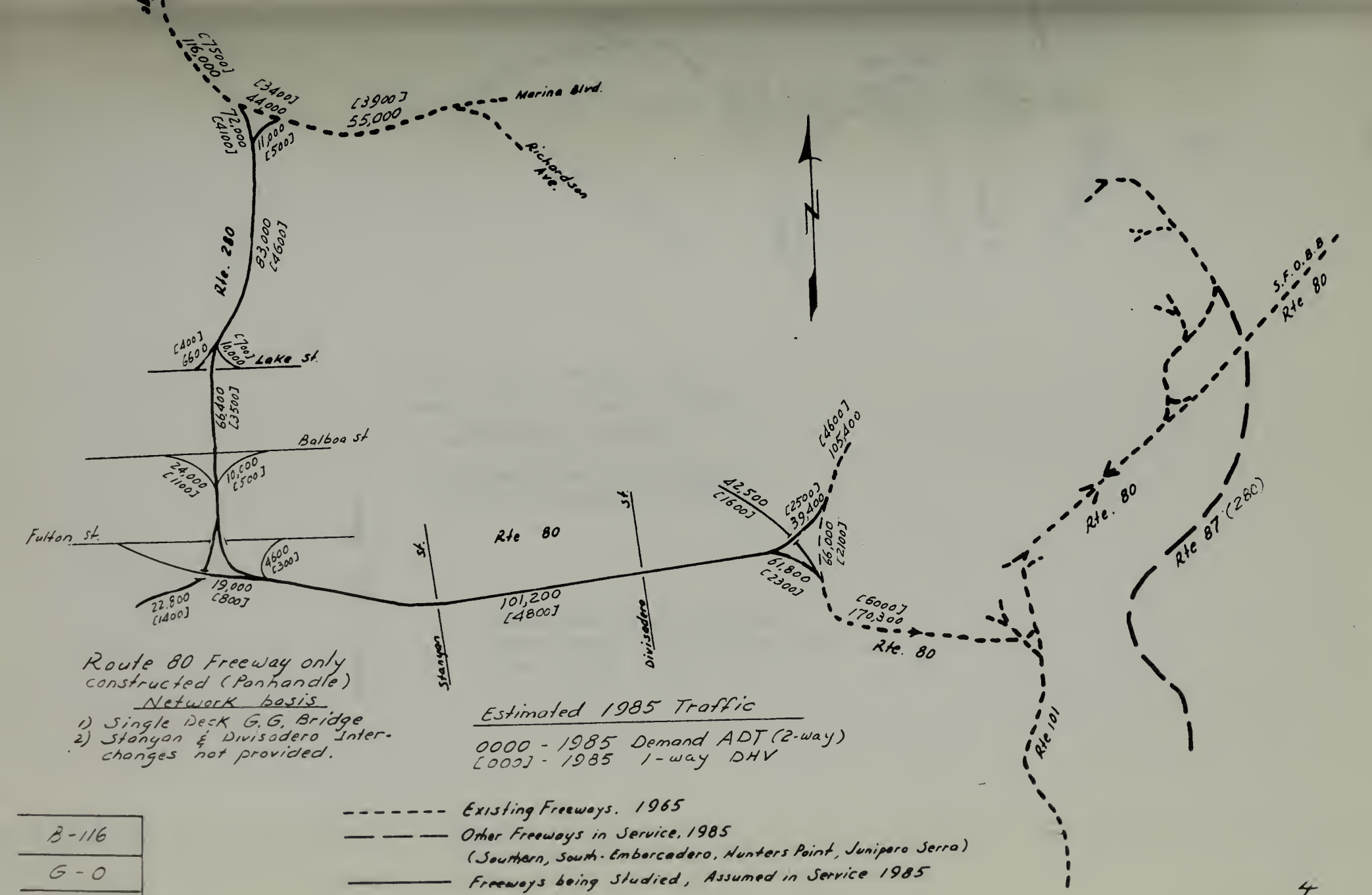
B - 116
G - C
D - E


[7500] 116,000
[3400] 44,000
72,000 [4100]
[2,000 [600]
[4100] 55,000
Marina Blvd.
Richardson Ave.
Rte. 280
34,000 [4600]
[300] 6000
[700] 10,000
Lake St.
63,000 [3600]
Balboa St
28,000 [1100]
10,000 [500]
Fulton St.
[000 [300]
20,000 [900]
[1400]
110,000 [5000]
St.
Stanyan
Rte 80
[700] 9000
St.
[1300] 31,000
154,000 [6100]
Oak 20,000
Fell [700]
[2900] 46,000
[5000] 112,000
108,000 [5200]
66,000 [2100]
[6000] 194,000
Rte. 80
Divisadero
[000 [400]
[000 [900]
Rte 101
S.F.O.B.B
Rte 80
Rte. 80
Rte 87
Route 80 Freeway only constructed (Panhandle)
Network basis
1) Single Deck G.G. Bridge
2) No Stanyan Interchange provided.
Estimated 1985 Traffic
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV
Existing Freeways. 1965
Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being Studied, Assumed in Service 1985

B-116

G-C

P-C



Route 80 Freeway only constructed (Panhandle) Network basis

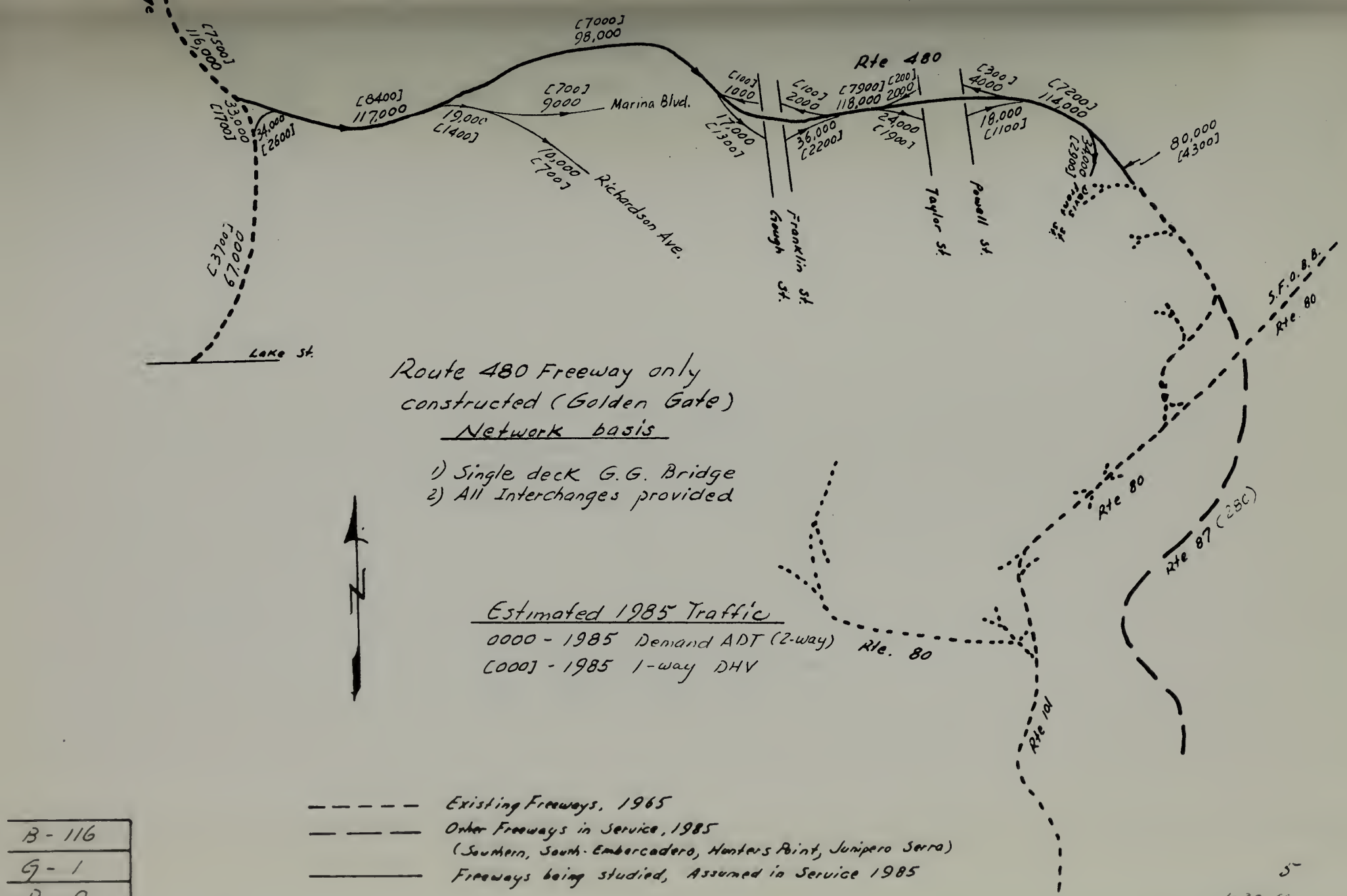
1) Single Deck G.G. Bridge
2) Stonyon & Divisadero Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways. 1965
— — — Other Freeways in Service. 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being Studied, Assumed in Service 1985

B-116
G-O
P-D



Route 480 Freeway only constructed (Golden Gate) Network basis

1) Single deck G.G. Bridge
2) All Interchanges provided

N

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

——— Existing Freeways, 1965

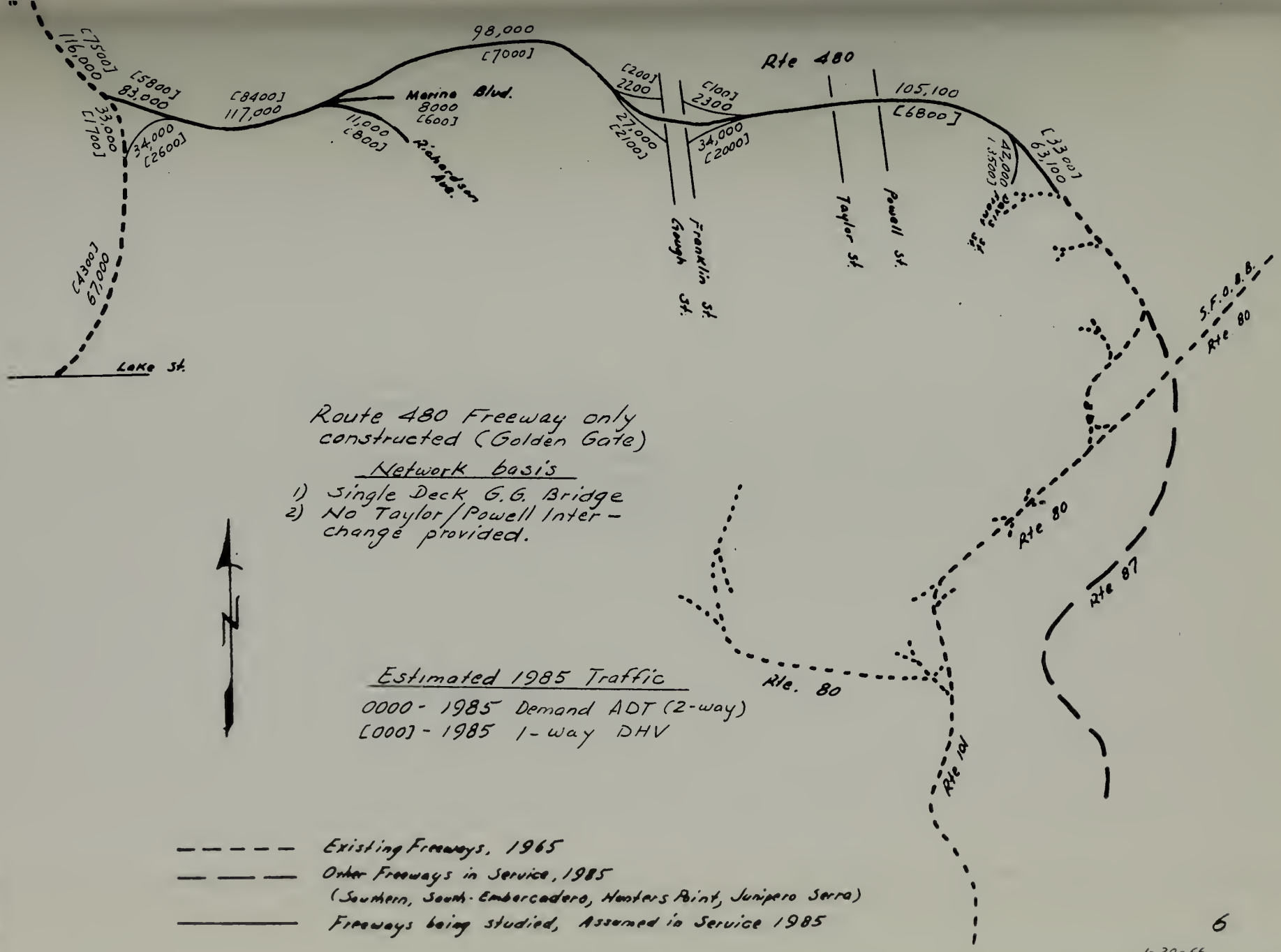
— — — Other Freeways in Service, 1985
(Southern, South Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B - 116
G - 1
P - 0

5

1-23-56



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Single Deck G.G. Bridge
2) No Taylor/Powell Interchange provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

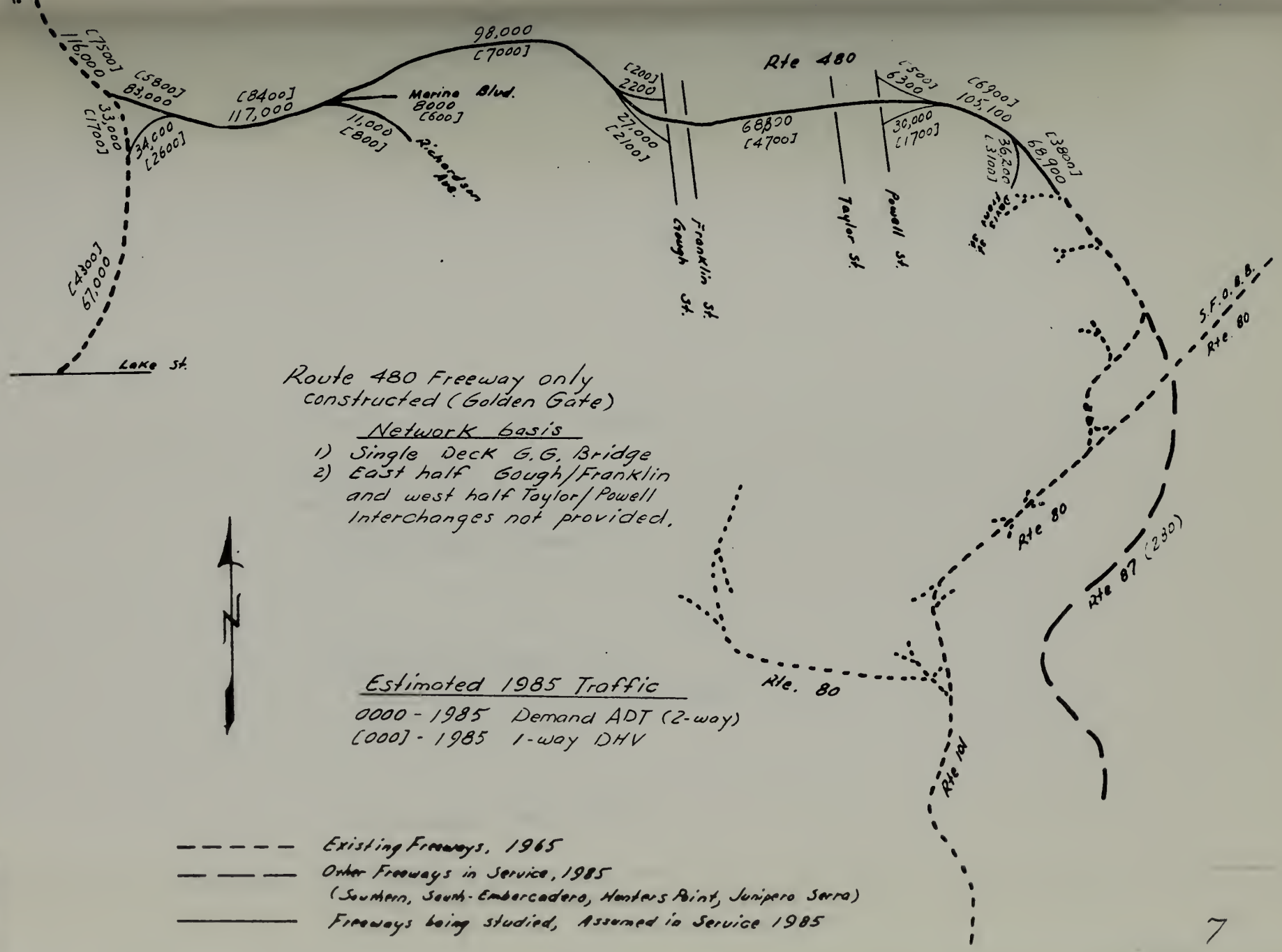
Existing Freeways, 1965

Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

Freeways being studied, Assumed in Service 1985

B-116
G-2
P-0

1-20-56



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Single Deck G.G. Bridge
2) East half Gough/Franklin and west half Taylor/Powell Interchanges not provided.

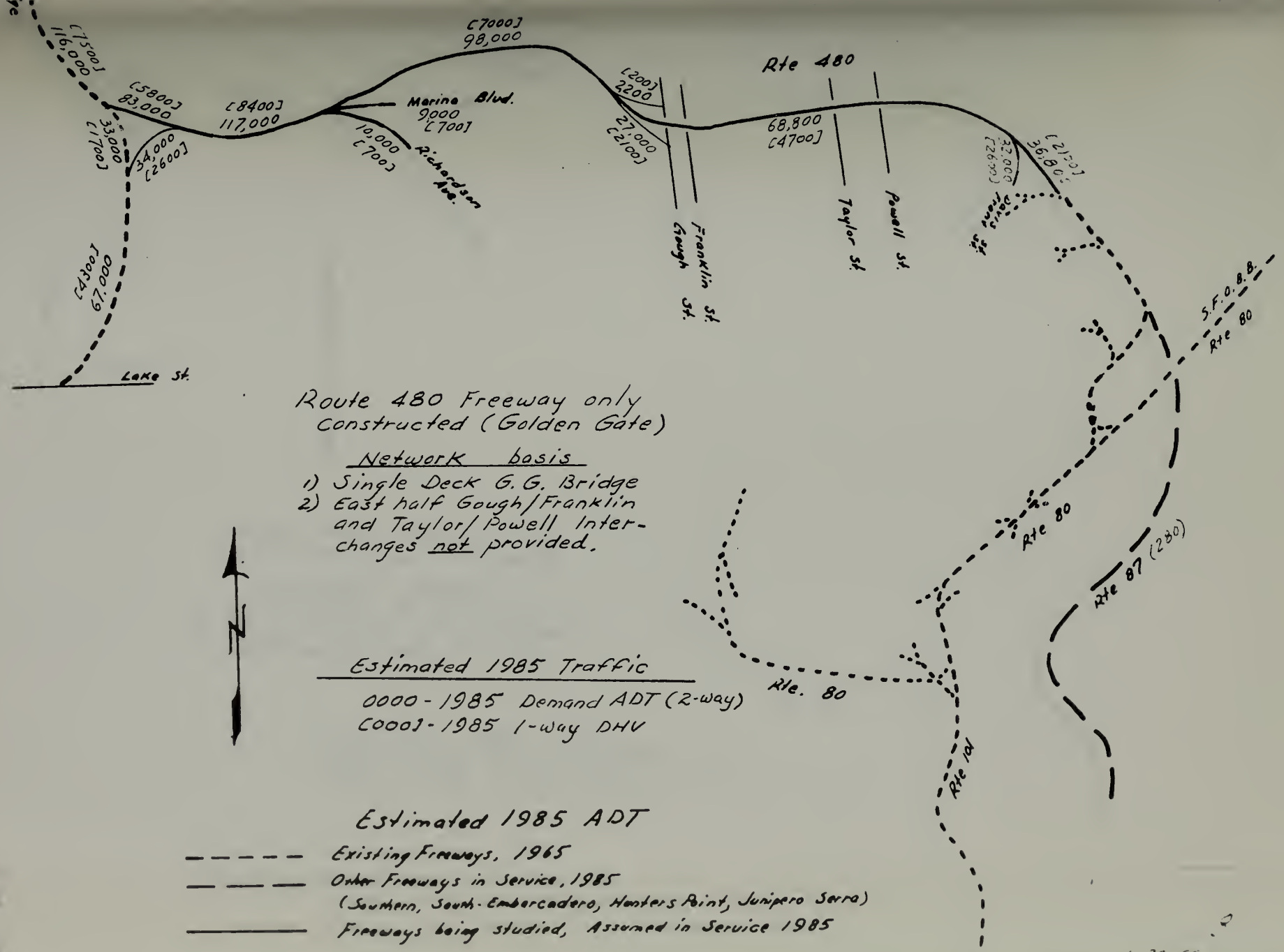
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

- - - - - Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 3
P - 0

1 - 20 - 66



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Single Deck G.G. Bridge
2) East half Gough/Franklin and Taylor/Powell Interchanges not provided.

Estimated 1985 Traffic

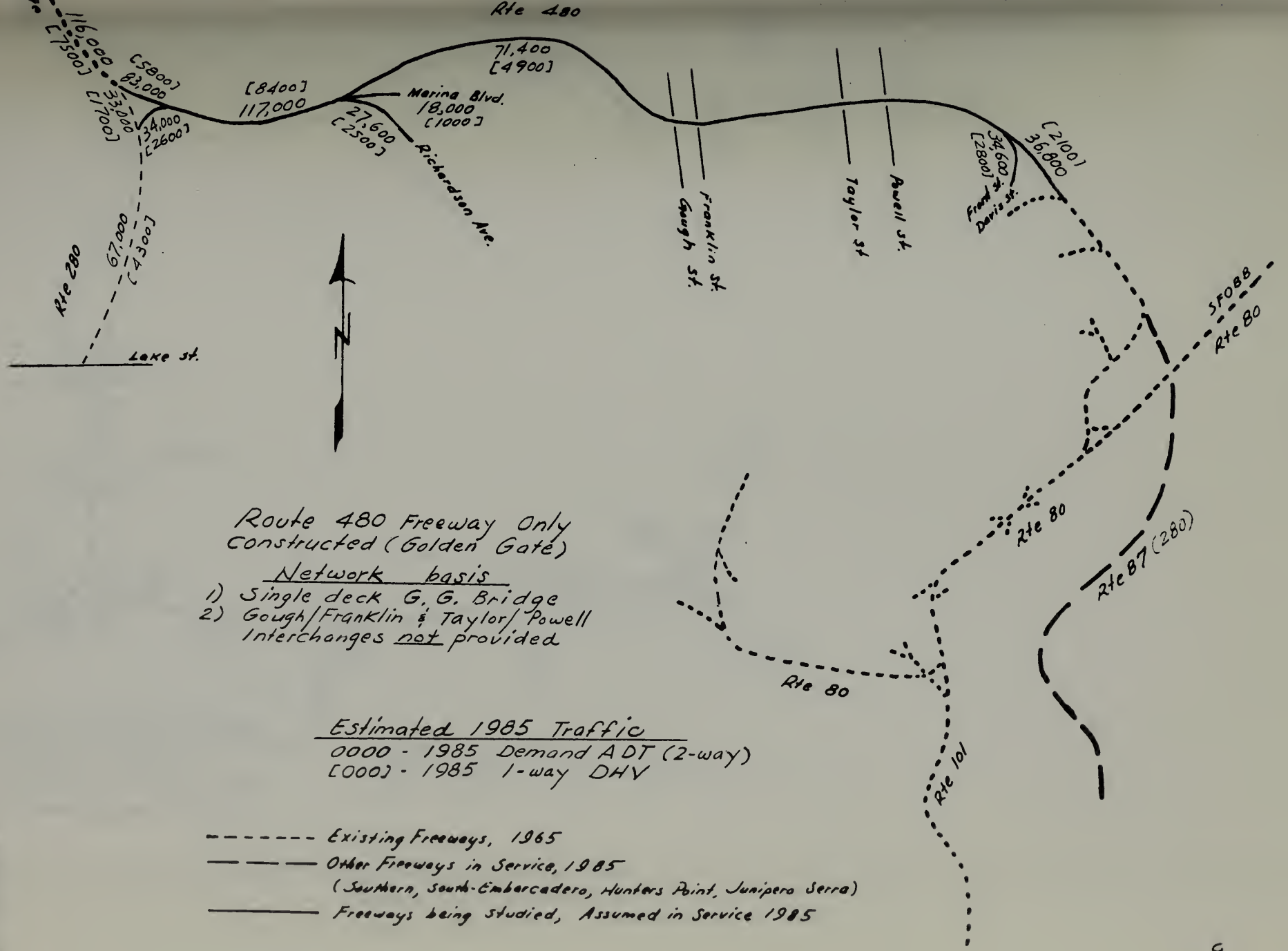
0000 - 1985 Demand ADT (2-way)
[0000] - 1985 1-way DHV

Estimated 1985 ADT

- – – – – Existing Freeways, 1965
- — — — Other Freeways in Service, 1985 (Southern, South-Embarcadero, Hunters Point, Junipero Serra)
- ——— Freeways being studied, Assumed in Service 1985

B-116
G-4
P-0

1-20-66



Route 480 Freeway Only Constructed (Golden Gate)

Network basis

1) Single deck G. G. Bridge
2) Gough/Franklin & Taylor/Powell Interchanges not provided

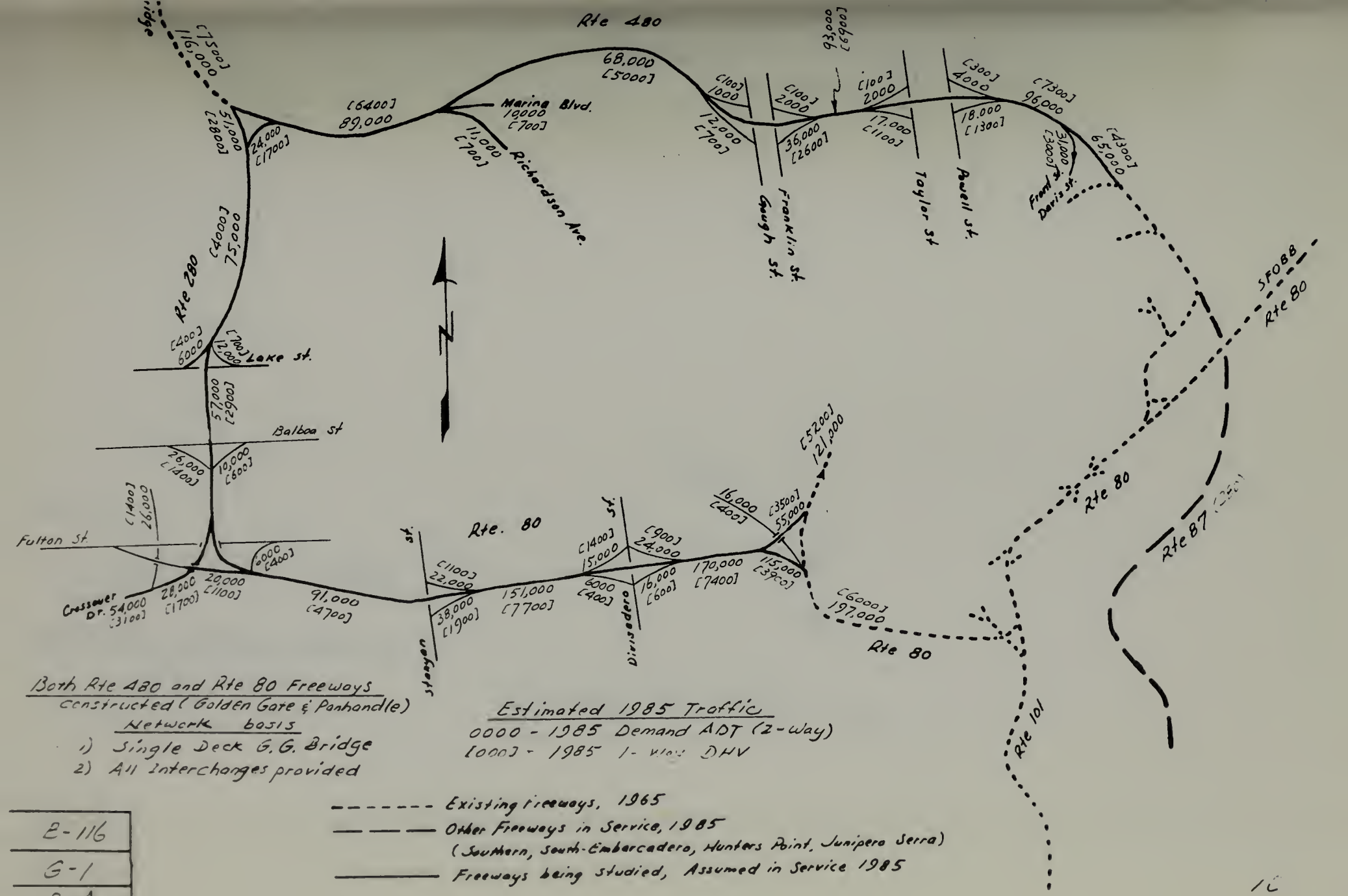
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being Studied, Assumed in Service 1985

B-116
G-5
P-9

9



Both Rte 480 and Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Single Deck G.G. Bridge
2) All Interchanges provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-Way)

[000] - 1985 1-Way DHV

------- Existing freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

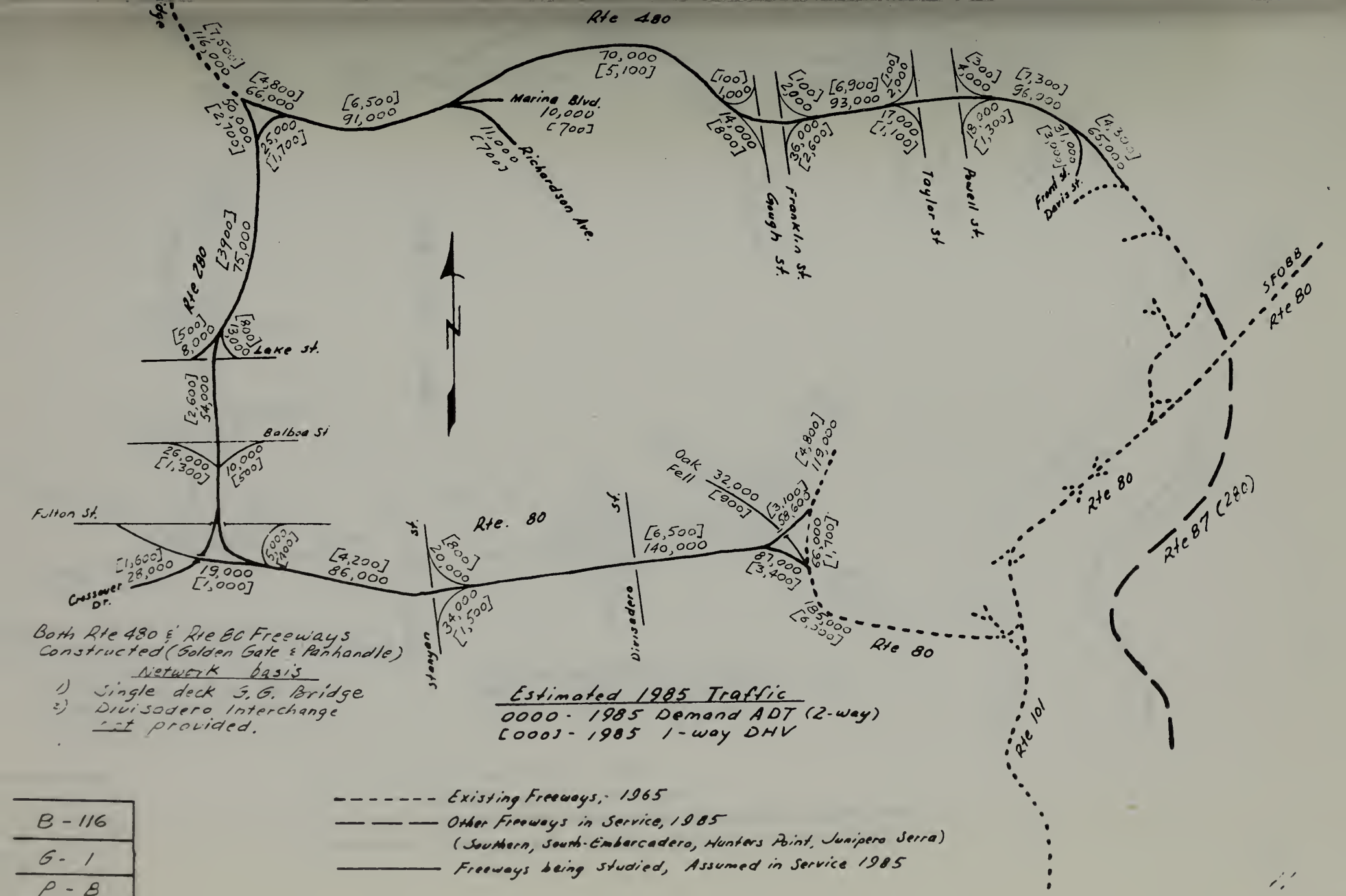
——— Freeways being studied, Assumed in Service 1985

2-116

G-1

P-A

1C



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle)

Network basis

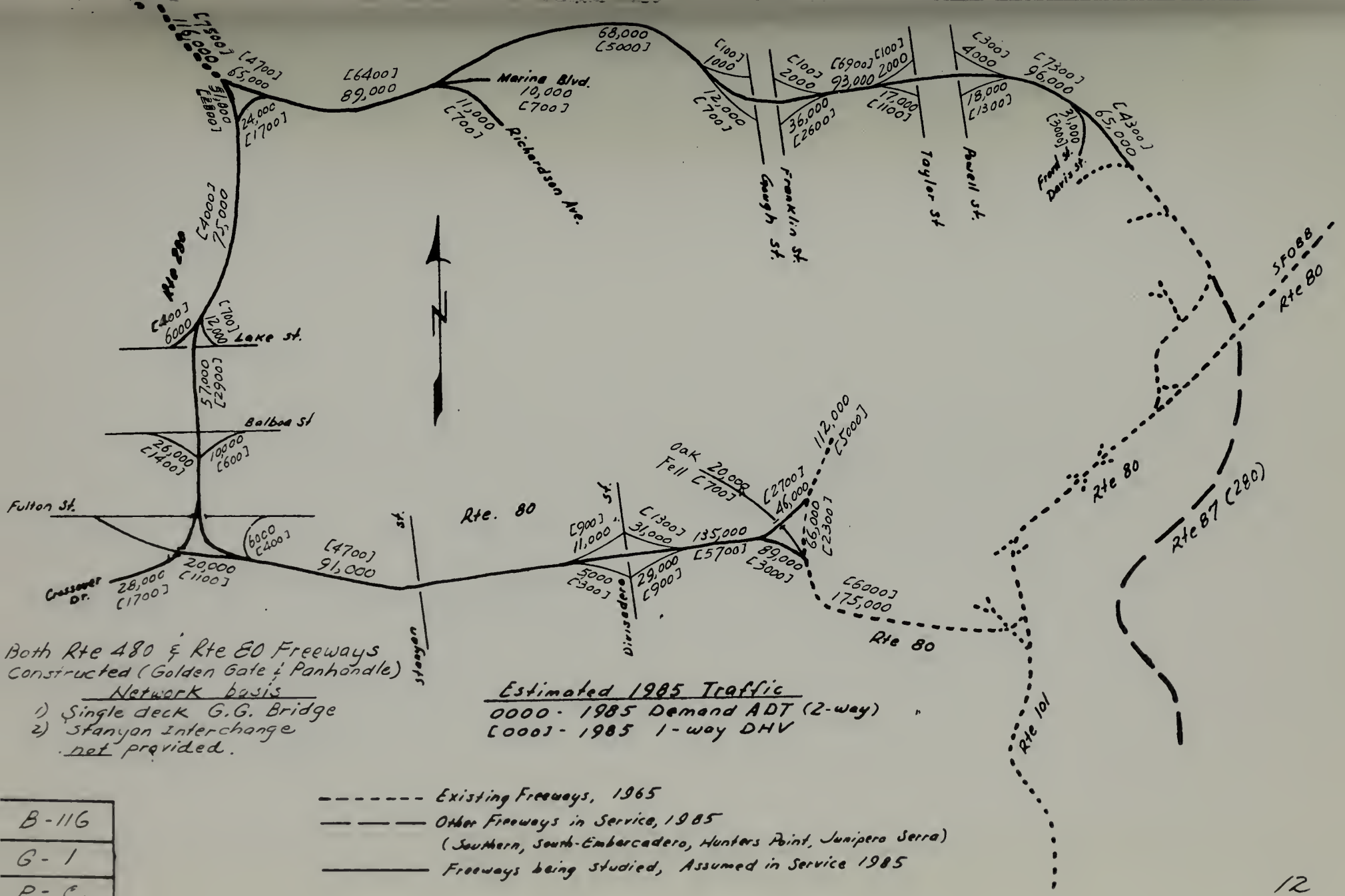
1) Single deck S.F. Bridge
2) Divisadero Interchange not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 1
P - B



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle)

Network basis

1) Single deck G.G. Bridge
2) Stanyon Interchange not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

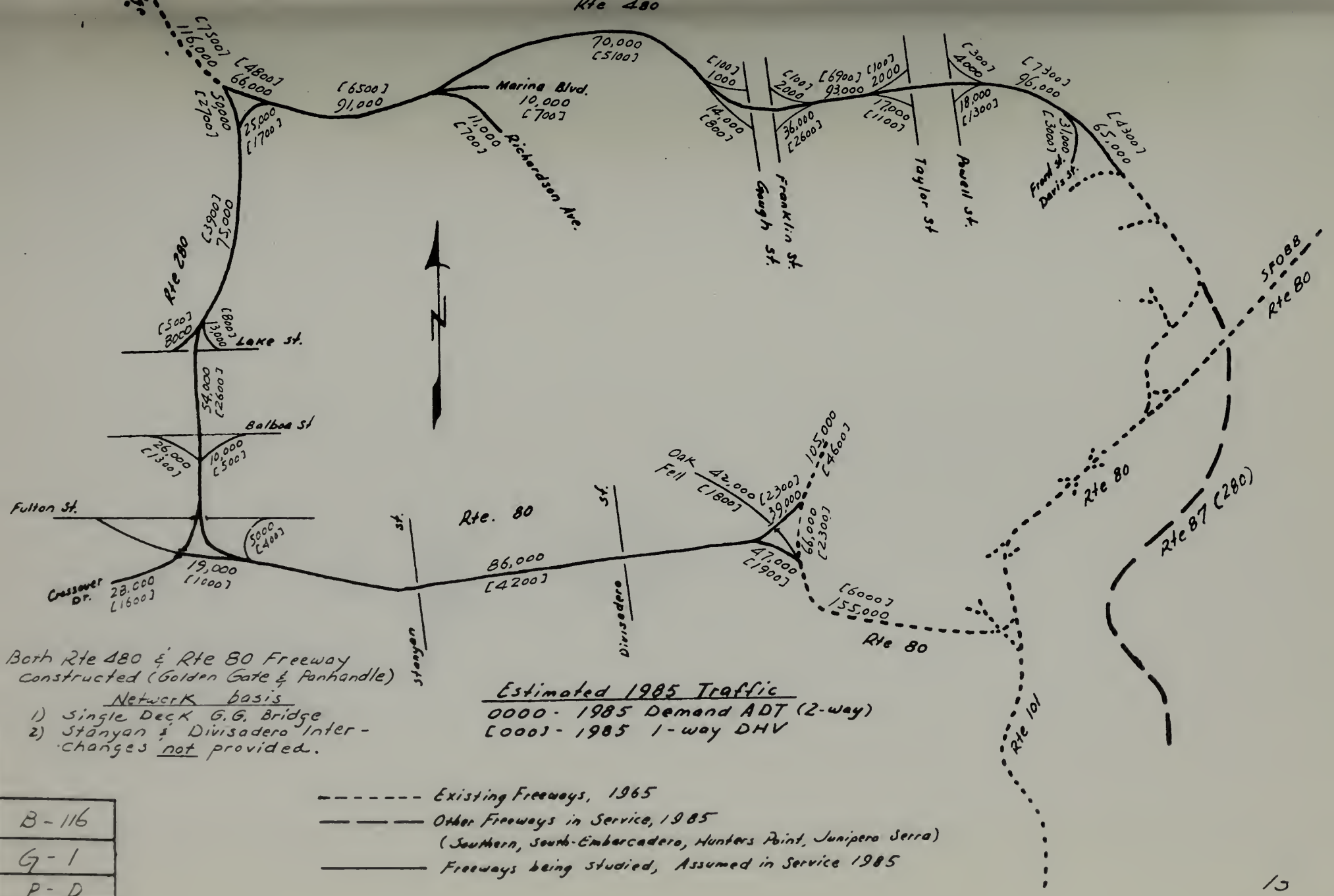
[000] - 1985 1-way DHV

------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-116
G-1
P-C



Both Rte 480 & Rte 80 Freeway constructed (Golden Gate & Panhandle)

Network basis

1) Single Deck G.G. Bridge
2) Stanyan & Divisadero Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

------- Existing Freeways, 1965

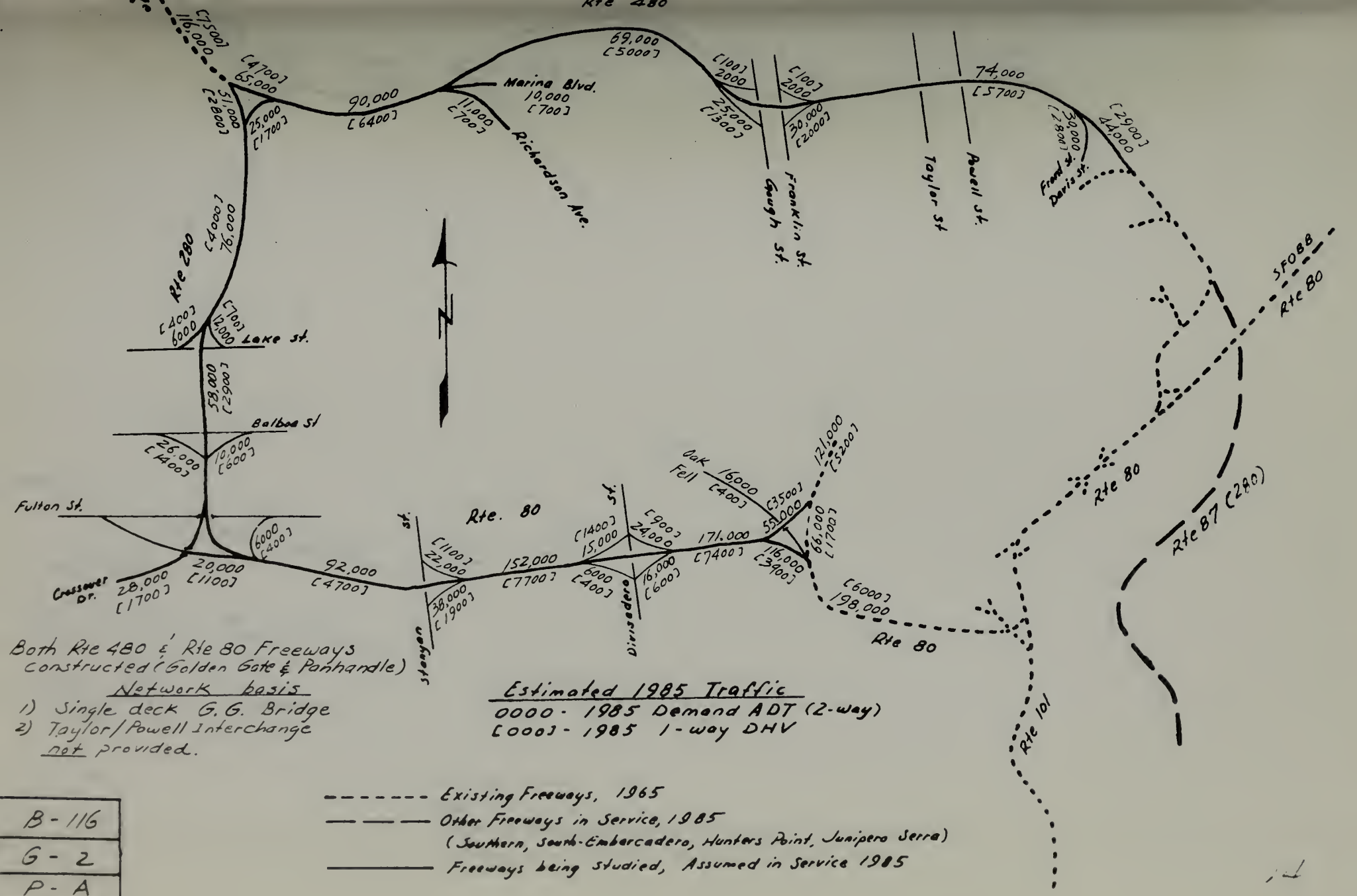
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-116

G-1

P-D



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

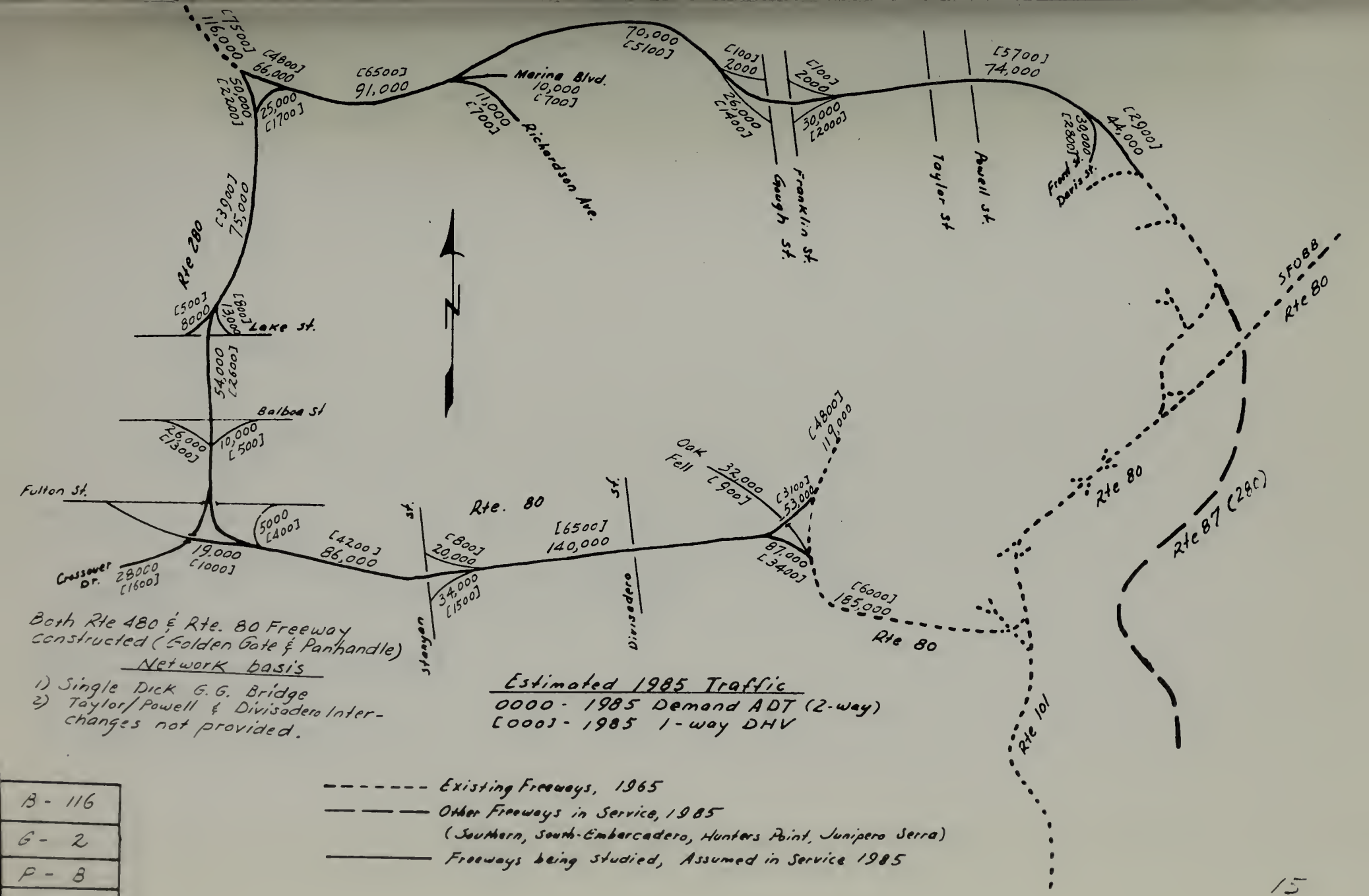
1) Single deck G.G. Bridge
2) Taylor/Powell Interchange not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

- - - - - - - Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 2
P - A



Both Rte 480 & Rte. 80 Freeway constructed (Golden Gate & Panhandle) Network basis

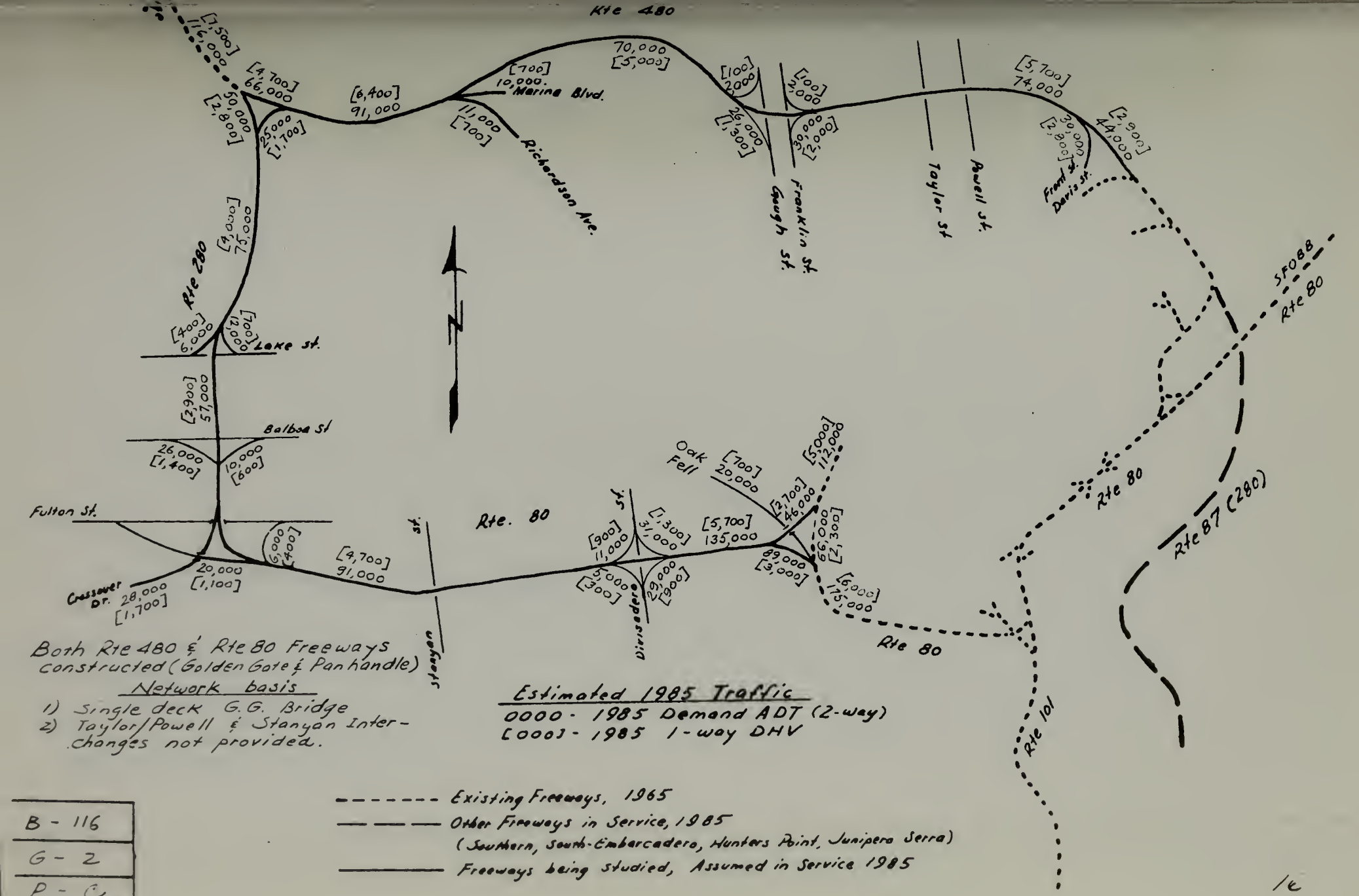
1) Single Deck G.G. Bridge
2) Taylor/Powell & Divisadero Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 2
P - 8



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Single deck G.G. Bridge
2) Taylor/Powell & Stanyan Interchanges not provided.

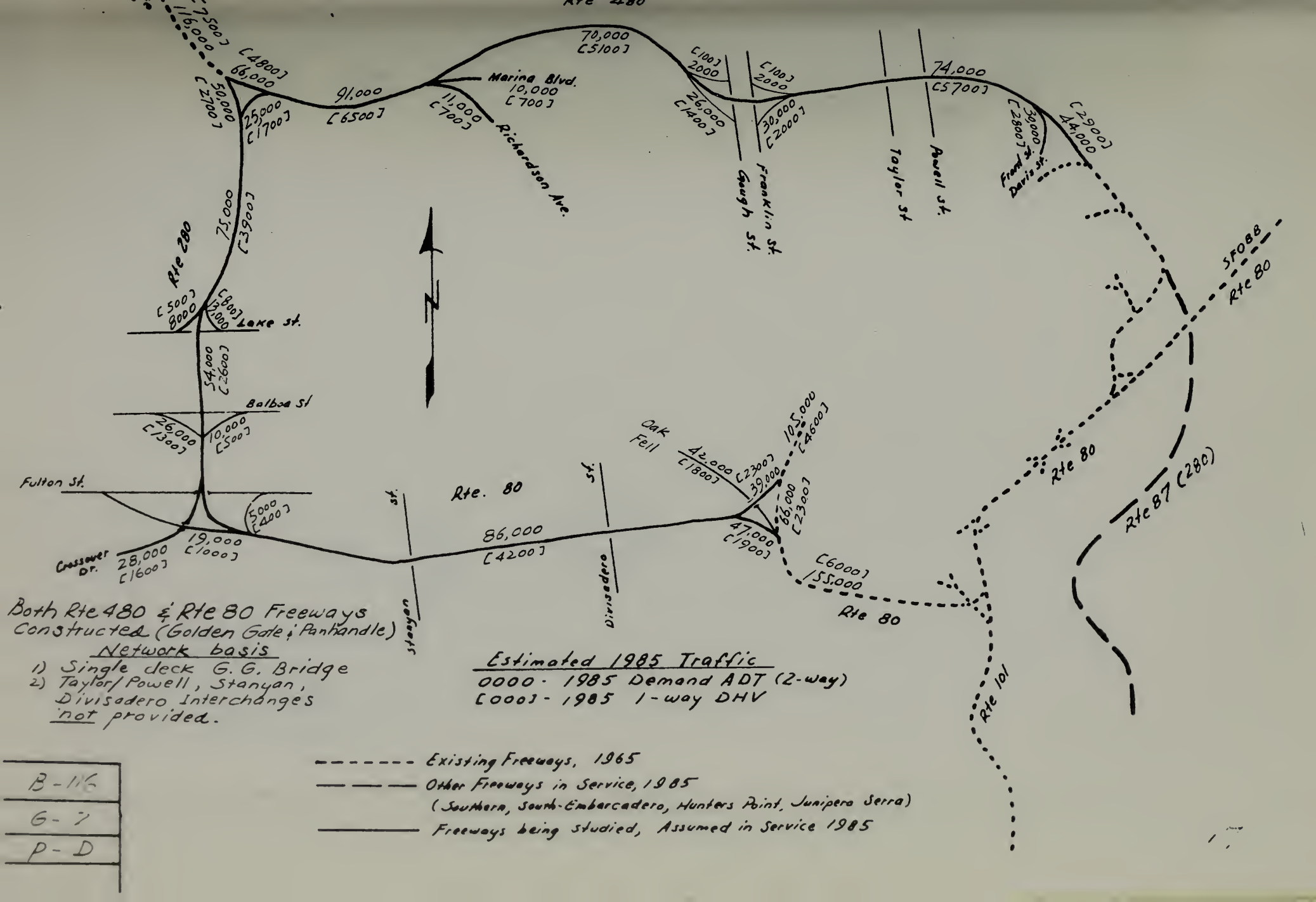
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 2
P - C

1c



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle)

Network basis

1) Single deck G. G. Bridge
2) Taylor/Powell, Stanyan, Divisadero Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

------- Existing Freeways, 1965

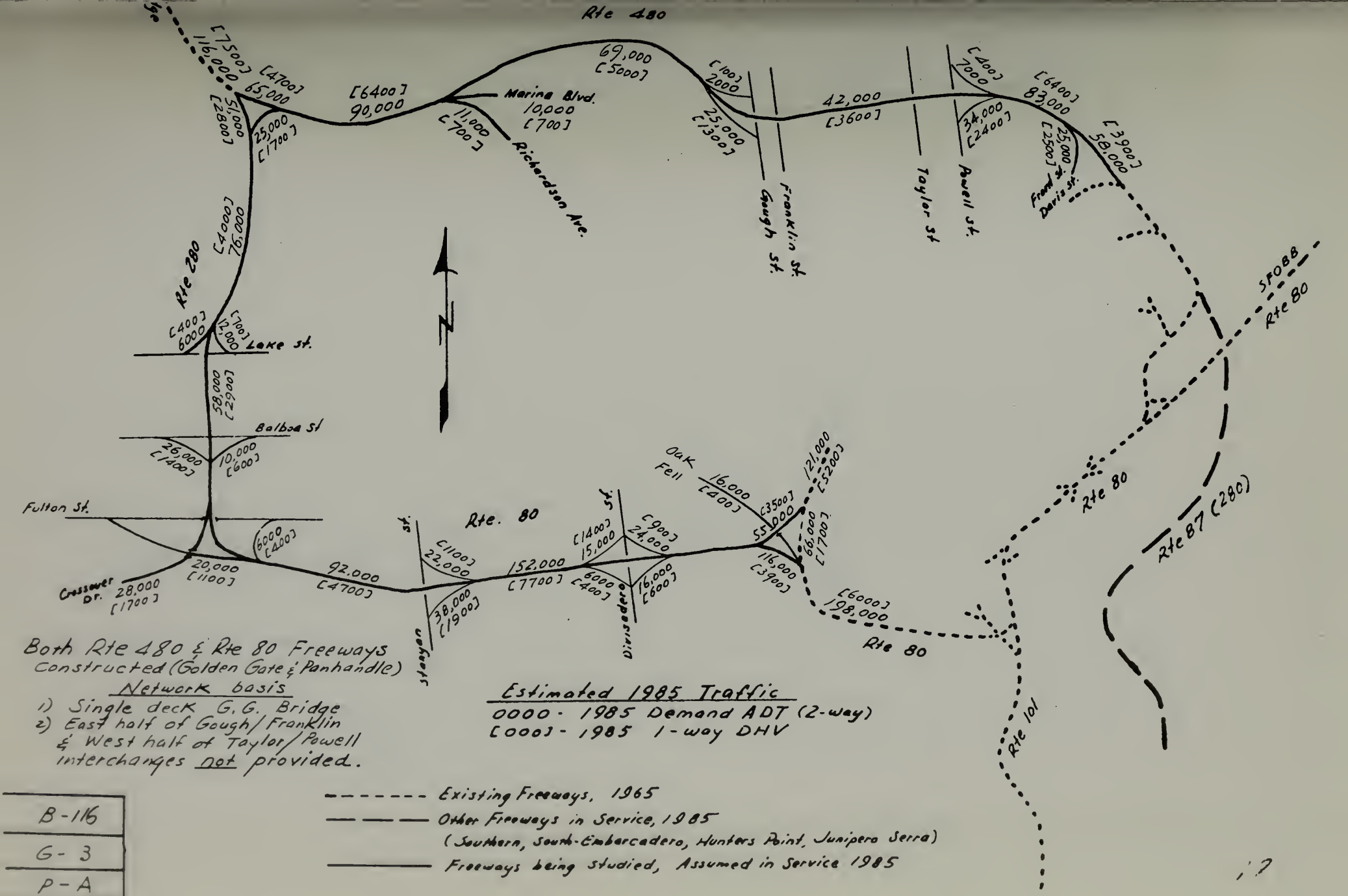
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-116

G-7

P-D



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Single deck G.G. Bridge
2) East half of Gough/Franklin & West half of Taylor/Powell interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

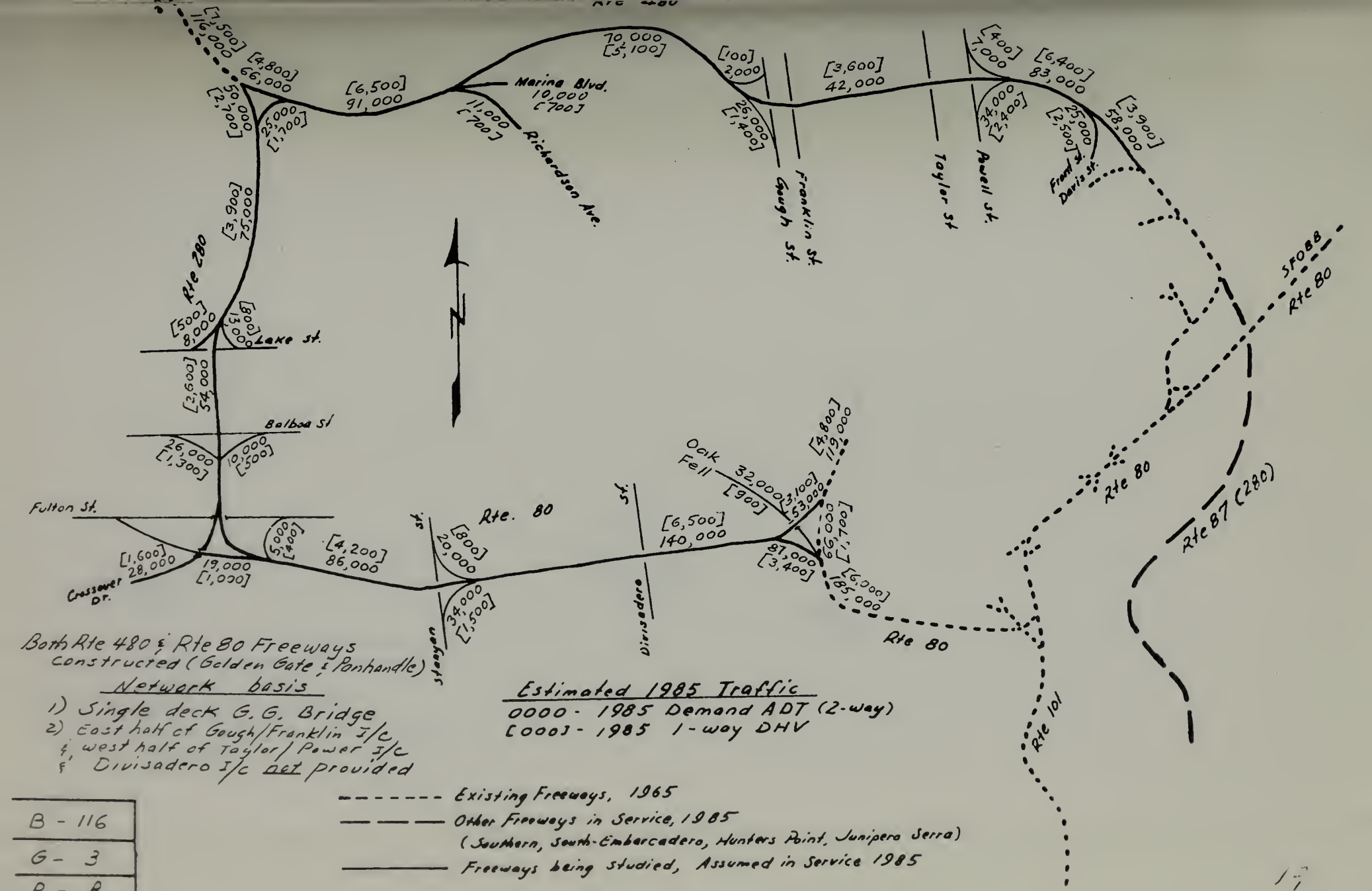
------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-116
G-3
P-A

17



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle)

Network basis

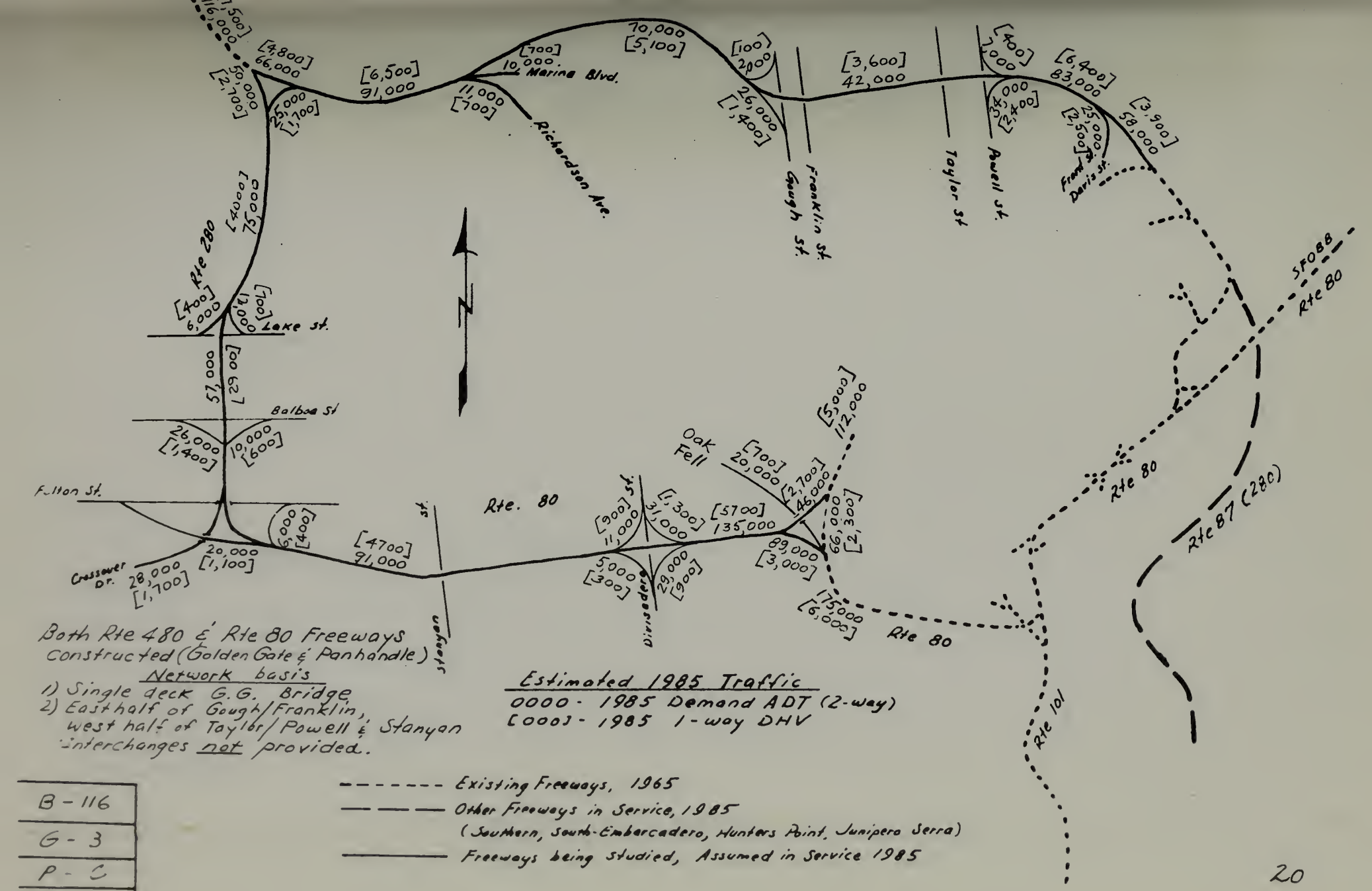
1) Single deck G. G. Bridge
2) East half of Gough/Franklin I/C & west half of Taylor/Power I/C & Divisadero I/C not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 3
P - 8



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

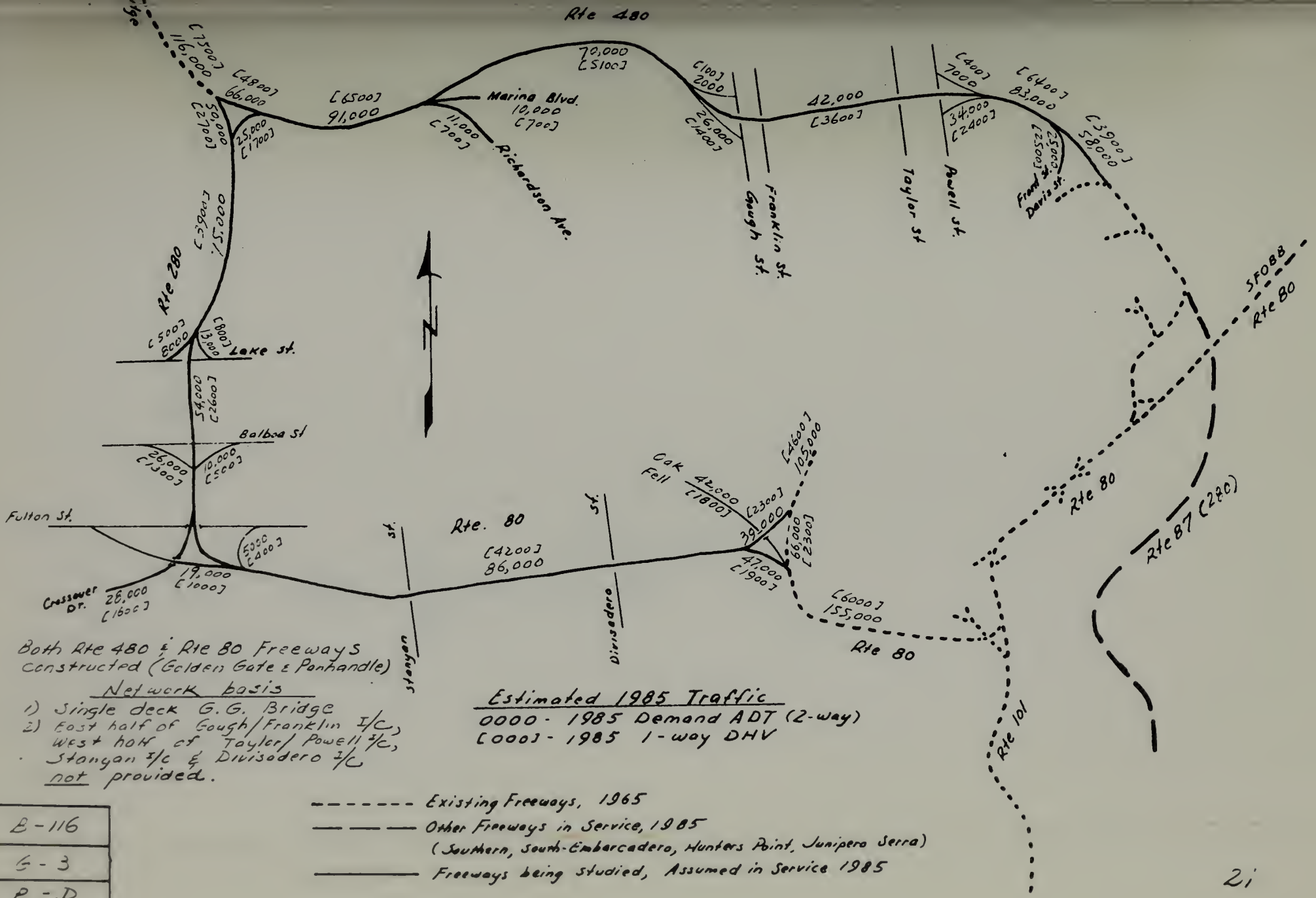
1) Single deck G.G. Bridge
2) East half of Gough/Franklin, west half of Taylor/Powell & Stanyan interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 3
P - C



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

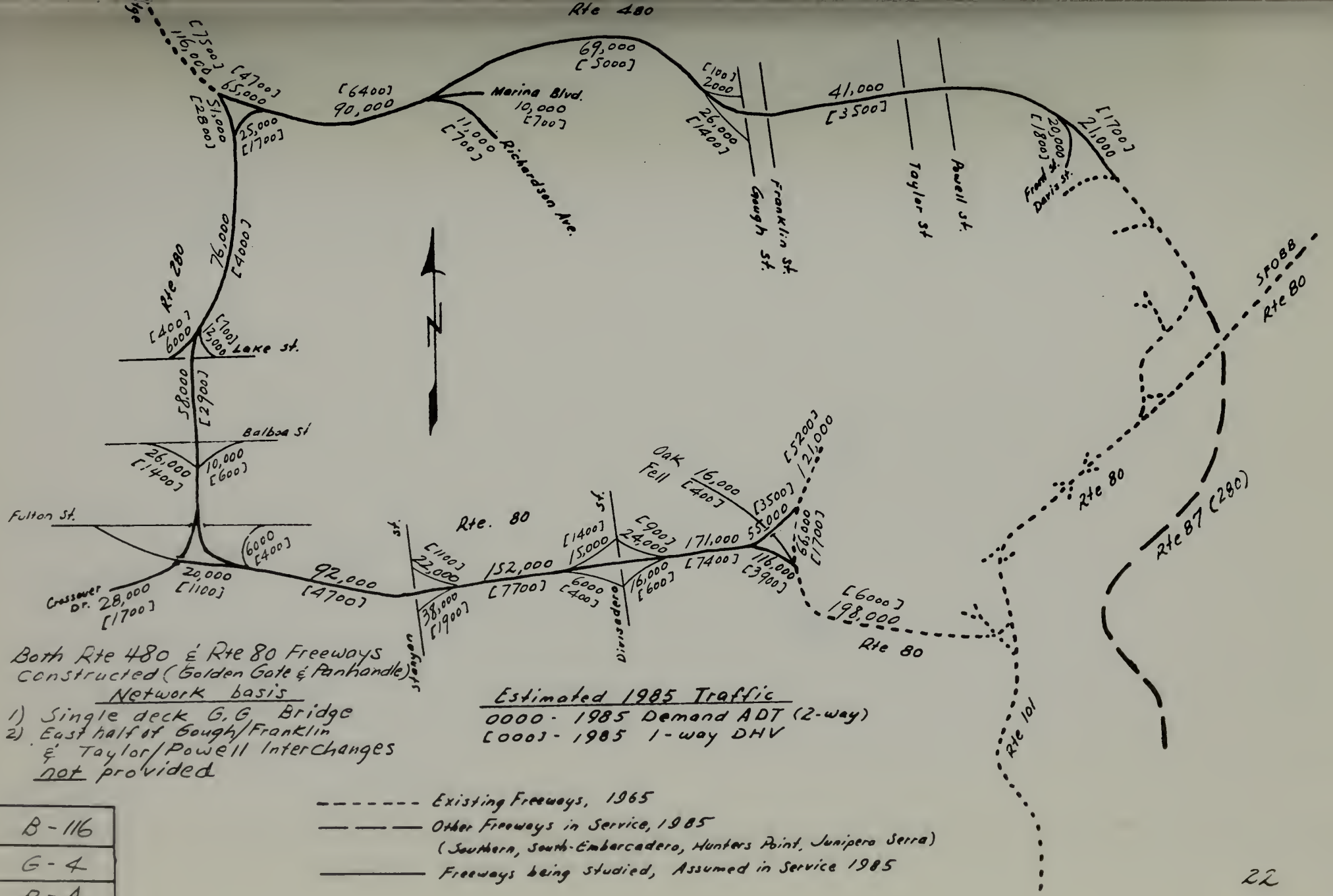
1) Single deck G.G. Bridge
2) East half of Gough/Franklin I/C, West half of Taylor/Powell I/C, Stanyan I/C & Divisadero I/C not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

E-116
G-3
P-D



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle) Network basis

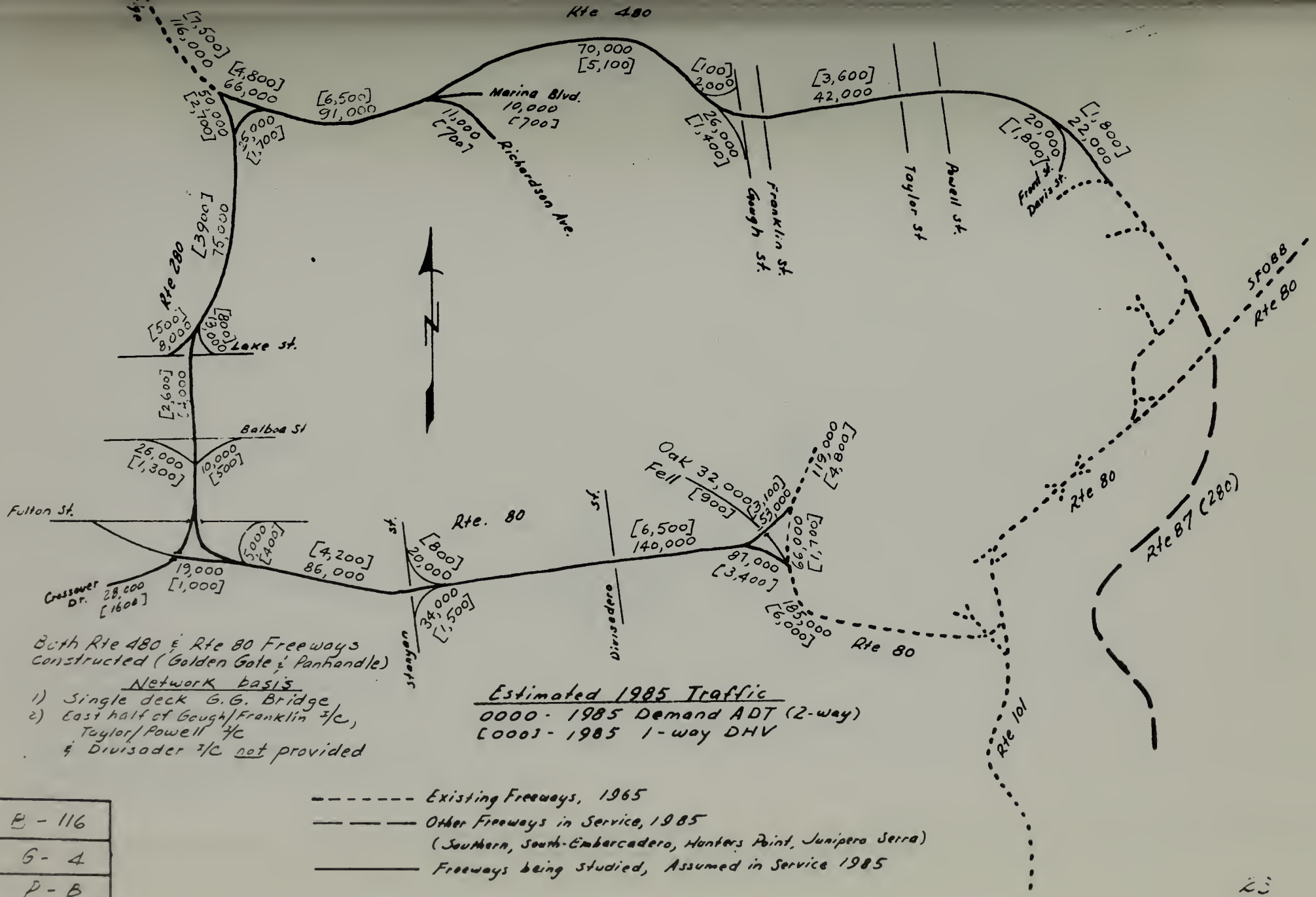
1) Single deck G.G. Bridge
2) East half of Gough/Franklin & Taylor/Powell Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-116
G-4
P-A



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

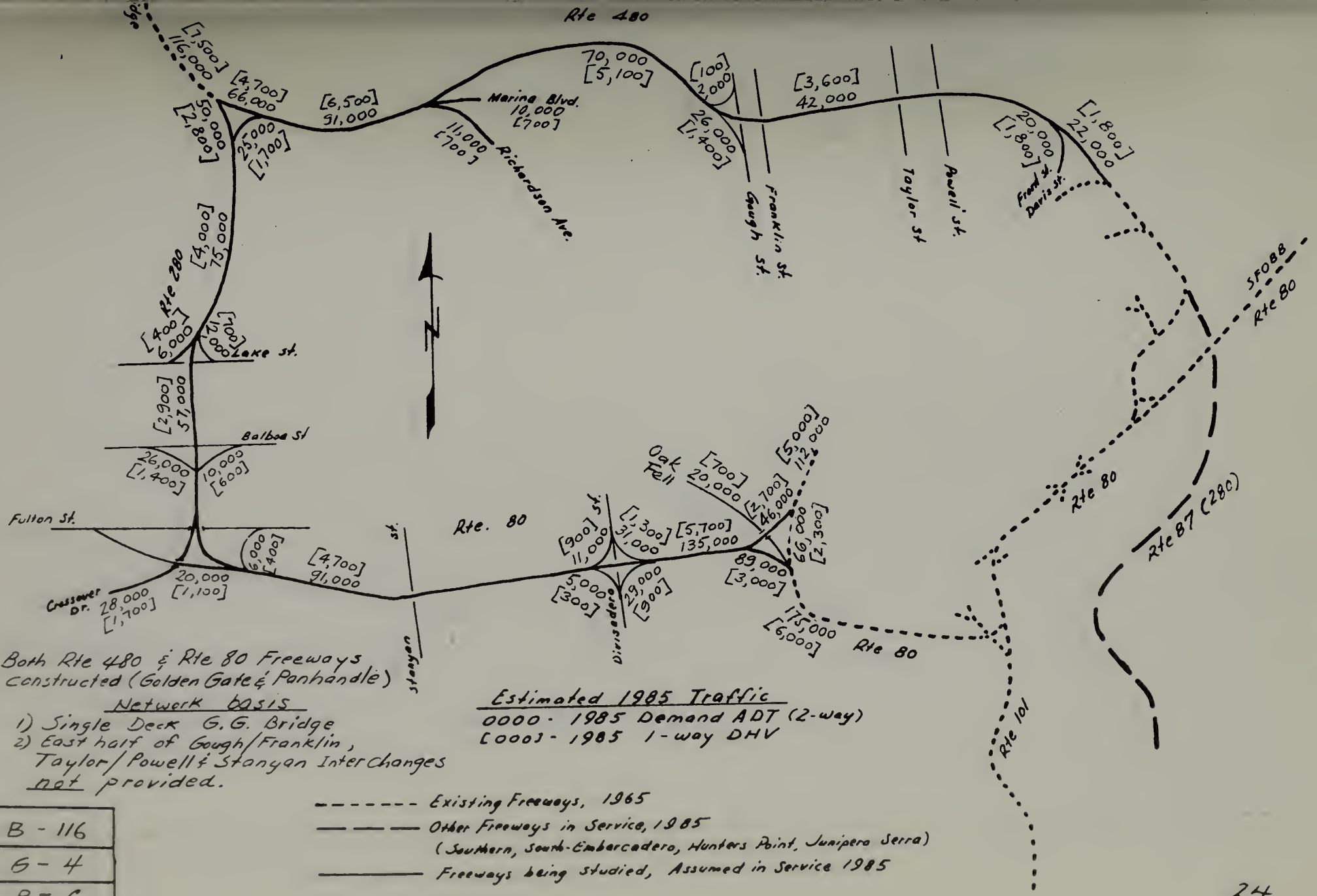
1) Single deck G.G. Bridge
2) East half of Gough/Franklin 3/c, Taylor/Powell 3/c & Divisadero 3/c not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

E - 116
G - 4
P - B



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

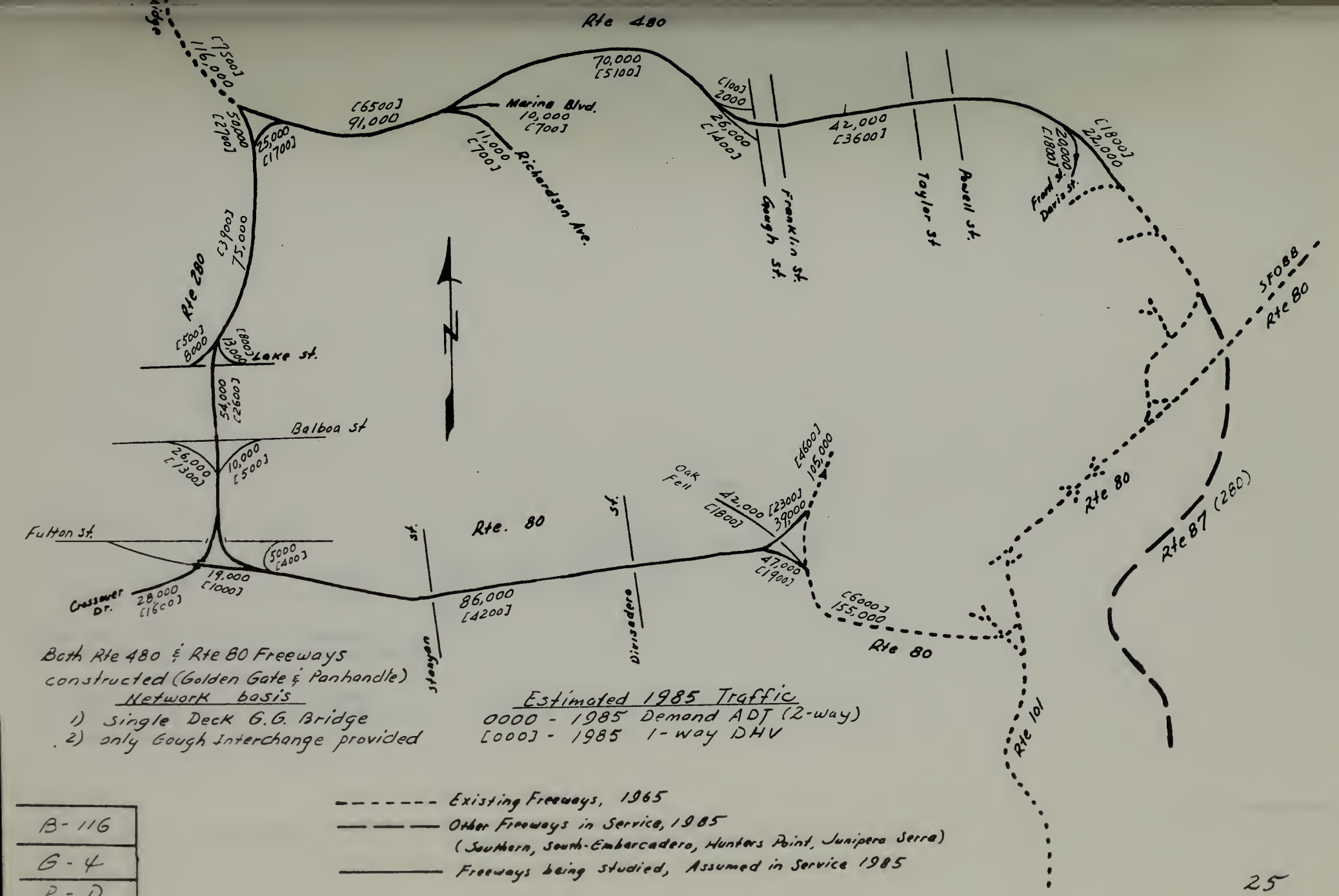
1) Single Deck G.G. Bridge
2) East half of Gough/Franklin, Taylor/Powell & Stanyan Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 116
G - 4
P - C



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle) Network basis

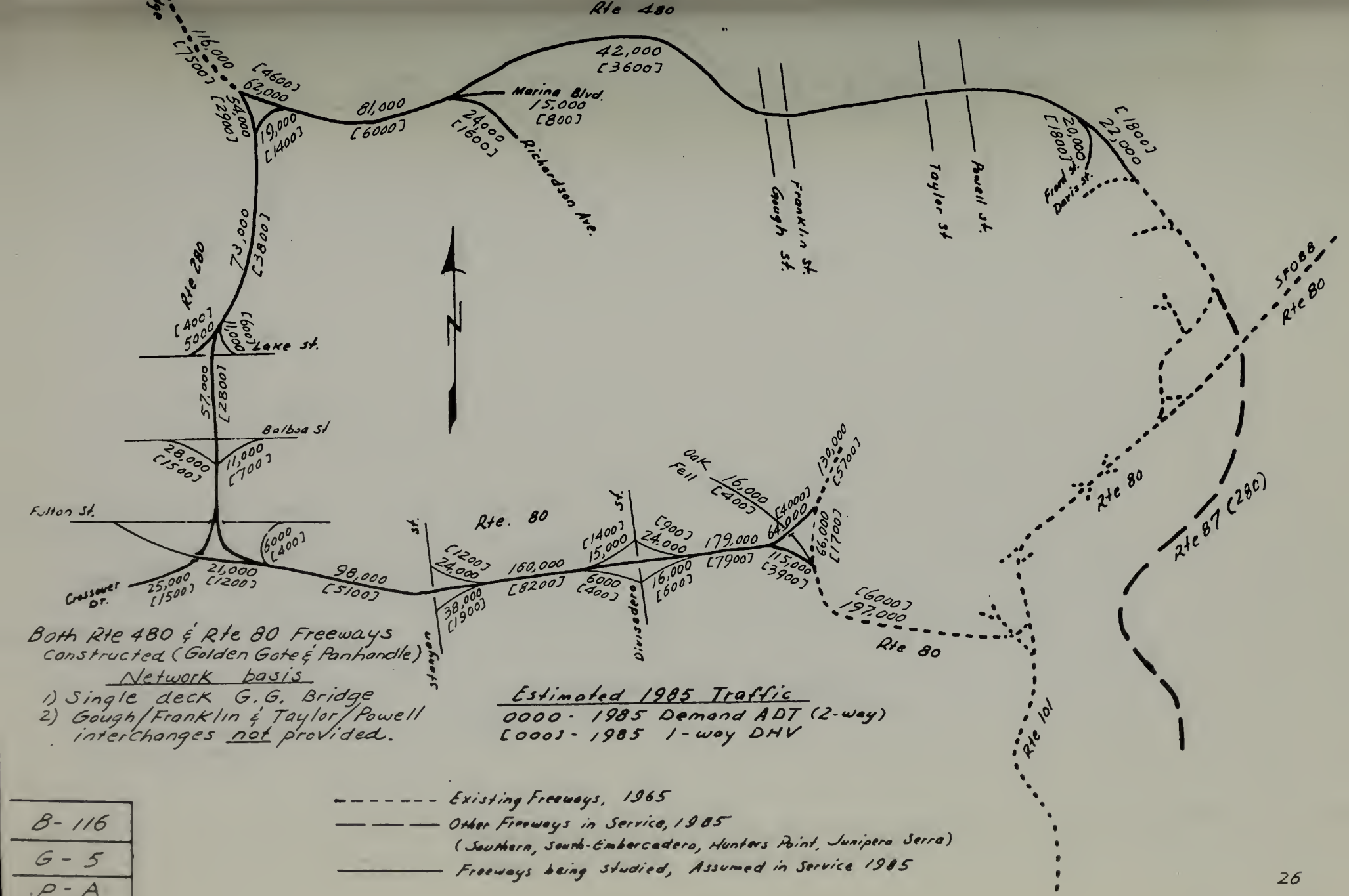
1) Single Deck G.G. Bridge
2) only Gough Interchange provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-116
G-4
P-D



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle)

Network basis

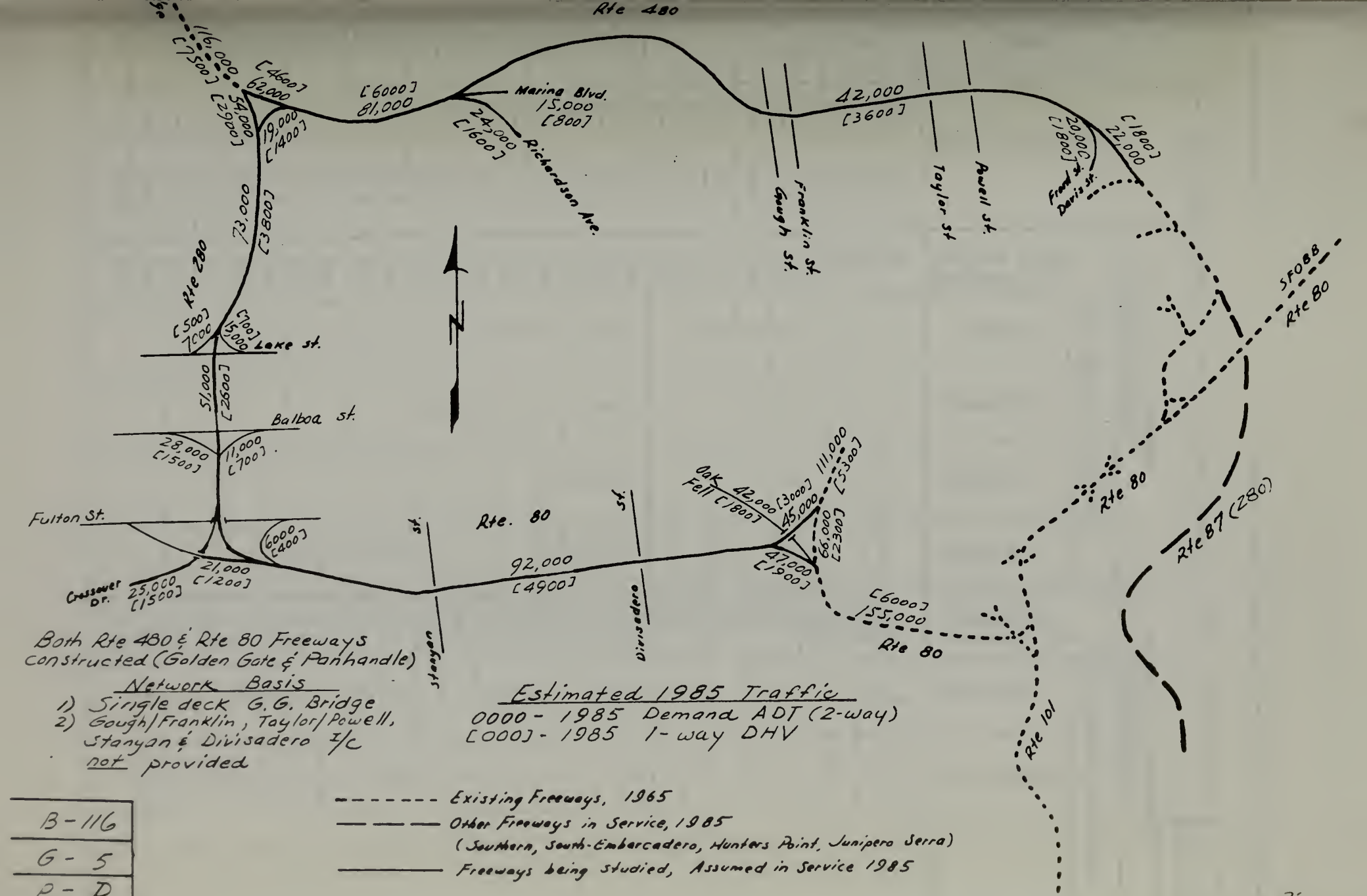
1) Single deck G.G. Bridge
2) Gough/Franklin & Taylor/Powell interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-116
G-5
P-A



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network Basis

1) Sirigle deck G.G. Bridge
2) Gough/Franklin, Taylor/Powell, Stanyan & Divisadero I/C not provided

Estimated 1985 Traffic

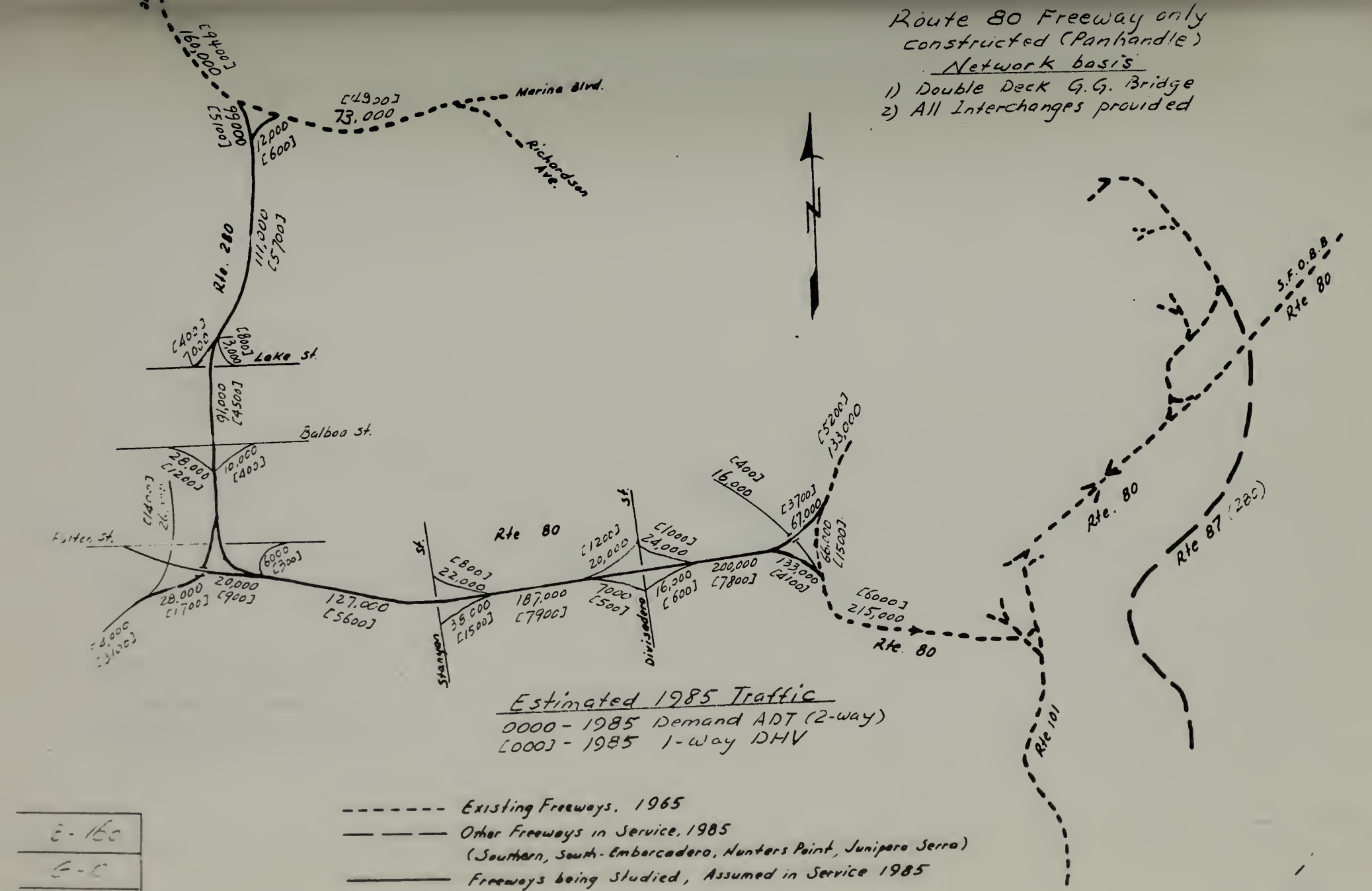
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

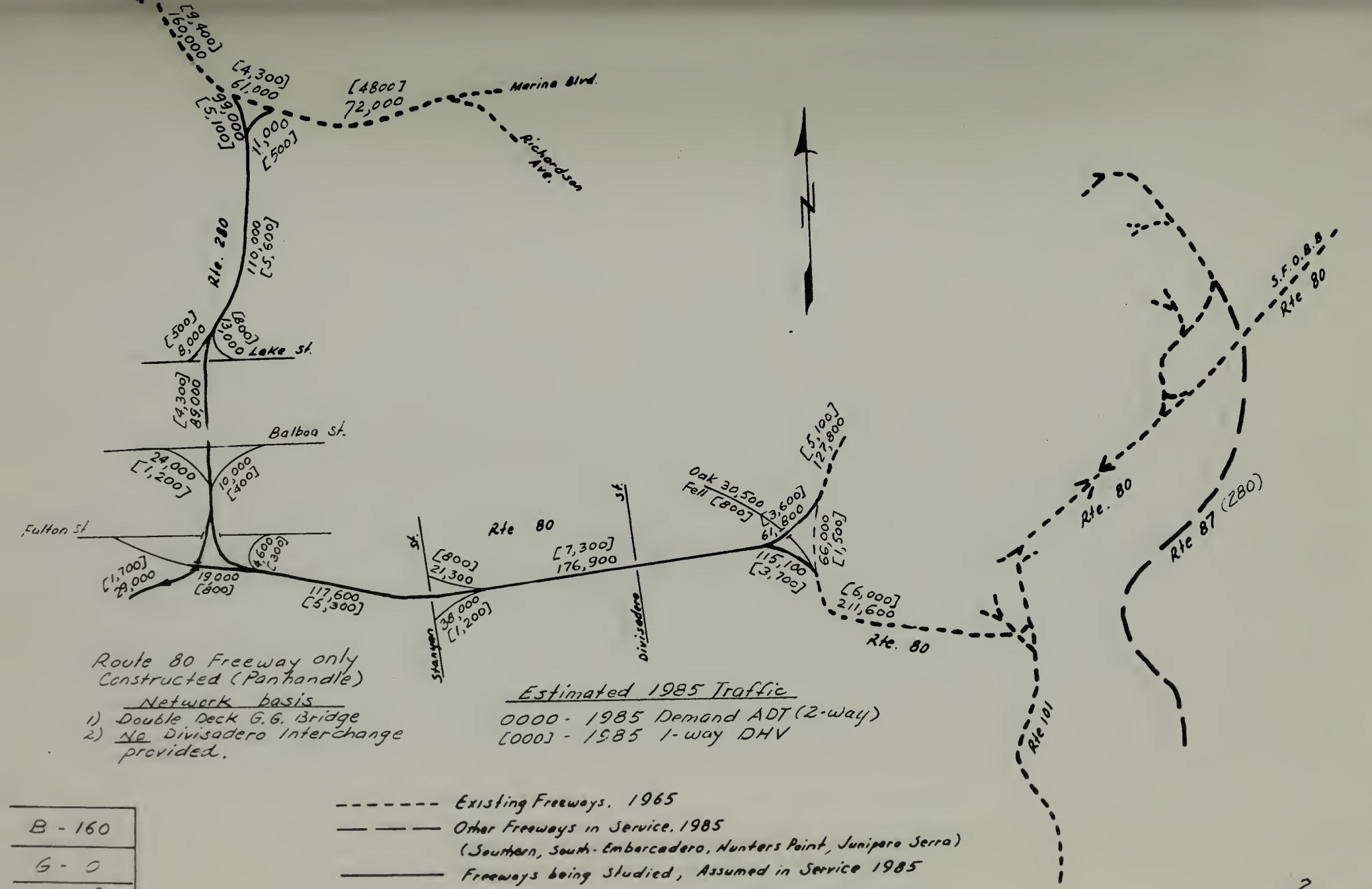
------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-116
G-5
P-D

B - 160 Assume Double Deck G.G.Bridge with 1985 ADT 160,000 B G P

Page	Code Designation	Route 480 Freeway (Golden Gate)					Route 80 Freeway (Panhandle)			
			(X) Ramps Provided					(X) Ramps Provided		
		Golden Gate Freeway In	Gough	Franklin	Taylor	Powell	Panhandle Freeway In	Stanyan	Divisadero	
1	G-0 P-A	No					Yes	X	X	
2	G-0 P-B	No					Yes	X		
3	G-0 P-C	No					Yes		X	
4	G-0 P-D	No					Yes			
5	G-1 P-0	Yes	X	X	X	X	No			
6	G-2 P-0	Yes	X	X			No			
7	G-3 P-0	Yes	X			X	No			
8	G-4 P-0	Yes	X				No			
9	G-5 P-0	Yes					No			
10	G-1 P-A	Yes	X	X	X	X	Yes	X	X	
11	G-1 P-B	Yes	X	X	X	X	Yes	X		
12	G-1 P-C	Yes	X	X	X	X	Yes		X	
13	G-1 P-D	Yes	X	X	X	X	Yes			
14	G-2 P-A	Yes	X	X			Yes	X	X	
15	G-2 P-B	Yes	X	X			Yes	X		
16	G-2 P-C	Yes	X	X			Yes		X	
17	G-2 P-D	Yes	X	X			Yes			
18	G-3 P-A	Yes	X			X	Yes	X	X	
19	G-3 P-B	Yes	X			X	Yes	X		
20	G-3 P-C	Yes	X			X	Yes		X	
21	G-3 P-D	Yes	X			X	Yes			
22	G-4 P-A	Yes	X				Yes	X	X	
23	G-4 P-B	Yes	X				Yes	X		
24	G-4 P-C	Yes	X				Yes		X	
25	G-4 P-D	Yes	X				Yes			
26	G-5 P-A	Yes					Yes	X	X	
27	G-5 P-D	Yes					Yes			


Route 80 Freeway only constructed (Panhandle)
Network basis
1) Double Deck G.G. Bridge
2) All Interchanges provided
[4400] 169,000
[5100] 99,000
12,000 [600]
[4930] 73,000
Marina Blvd.
Richardson Ave.
Rte. 280
111,000 [5700]
[400] 7000
13,000 [800]
Lake St.
91,000 [4500]
Balboa St.
28,000 [1200]
10,000 [400]
[1400] 26,000
Fulton St.
6000 [300]
28,000 [1700]
20,000 [900]
18,000 [1100]
127,000 [5600]
St.
[800] 22,000
35,000 [1500]
Stanyan
Rte 80
187,000 [7900]
[1200] 20,000
St.
[1000] 24,000
7000 [500]
16,000 [600]
Divisadero
200,000 [7800]
[400] 16,000
[3700] 67,000
133,000 [4100]
[5200] 133,000
66,000 [1500]
[6000] 215,000
Rte. 80
Rte 101
S.F.O.B.B. Rte 80
Rte. 80
Rte 87 (28C)
Estimated 1985 Traffic
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-Way DHV
Existing Freeways, 1965
Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being Studied, Assumed in Service 1985
E-1EC
E-E
P-A



Route 80 Freeway only Constructed (Panhandle)

Network basis

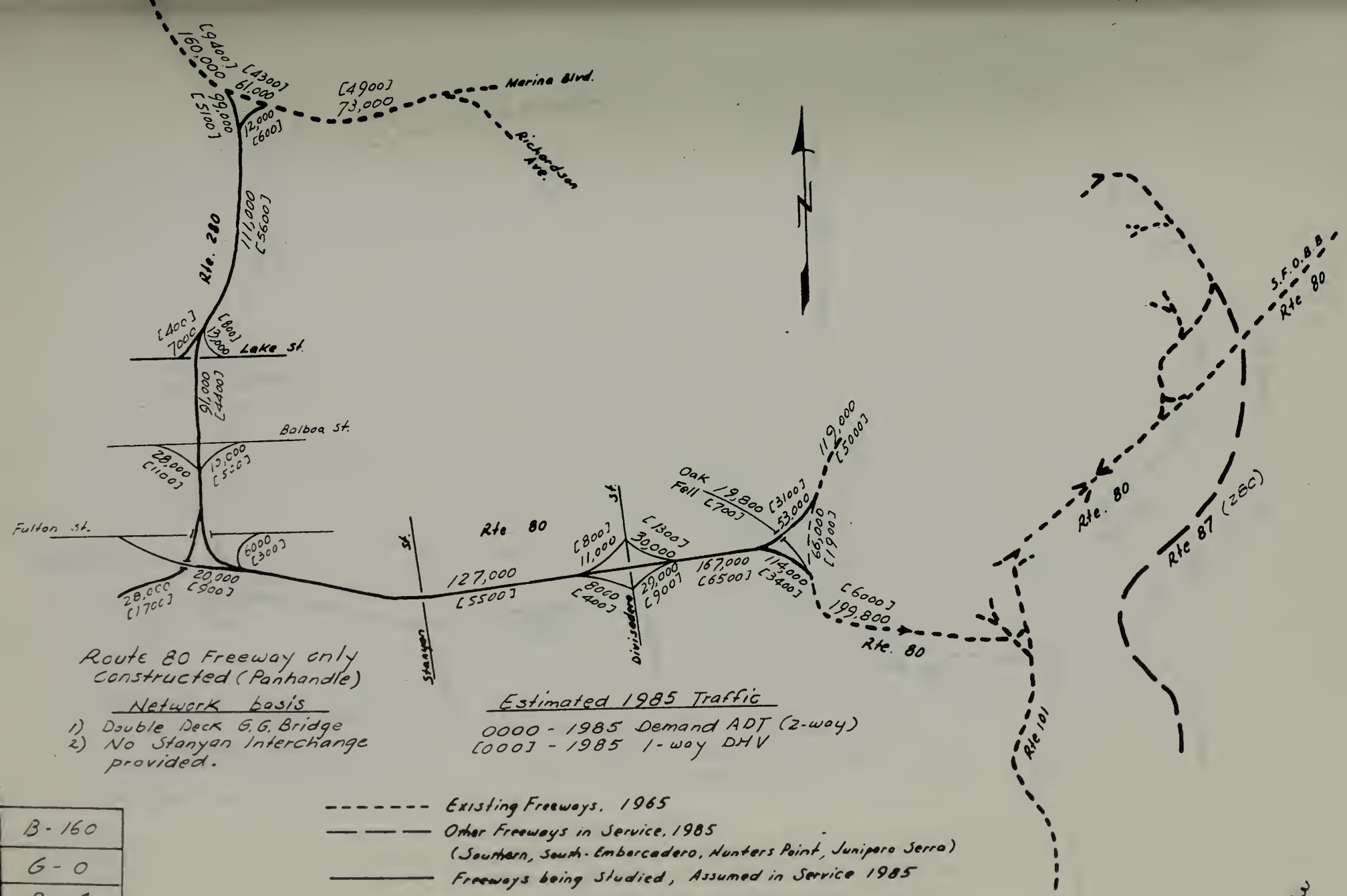
1) Double Deck G.G. Bridge
2) No Divisadero Interchange provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways. 1965
— — — Other Freeways in Service. 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being Studied, Assumed in Service 1985

B - 160
G - O
F - B



Route 80 Freeway only constructed (Panhandle)

Network basis

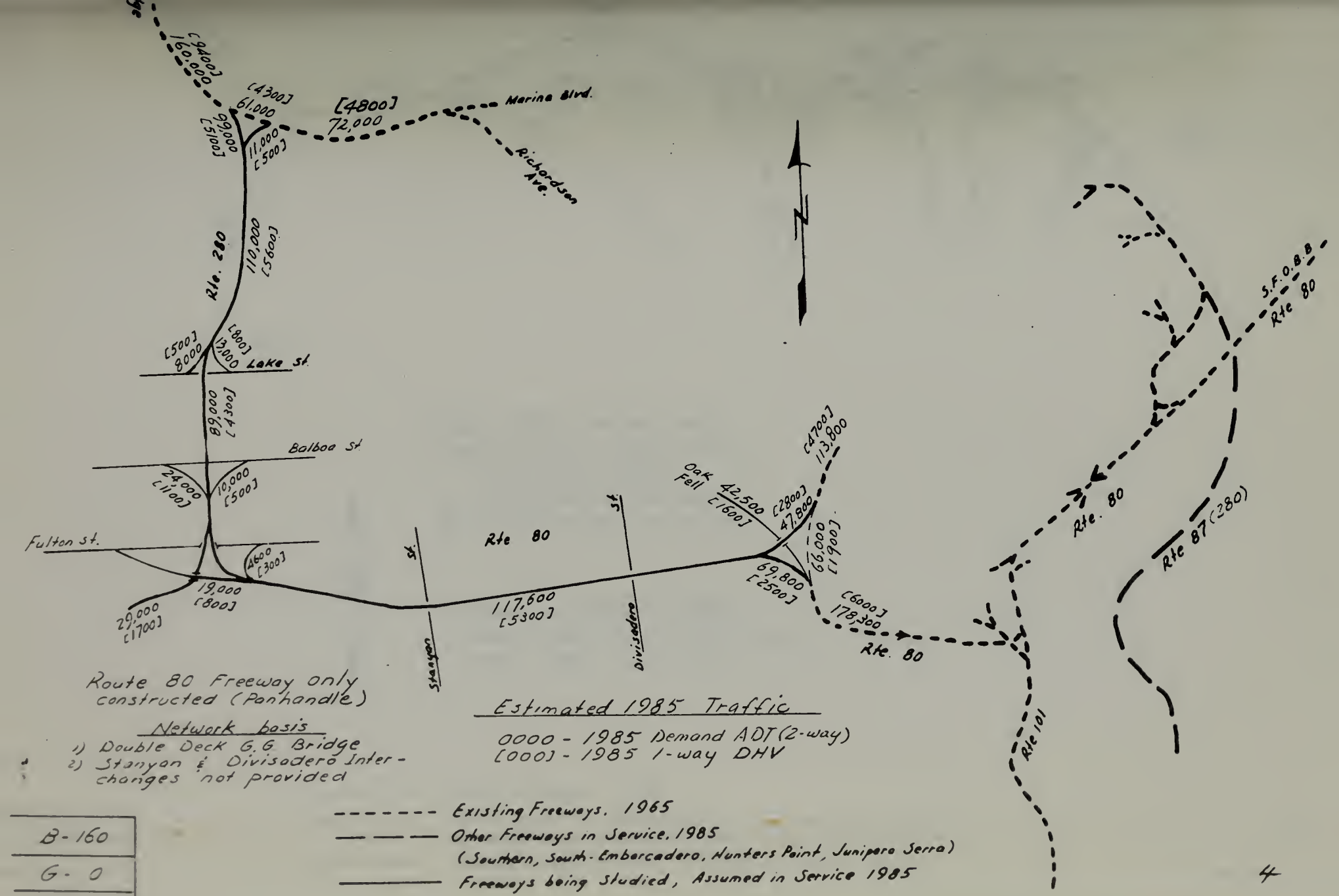
1) Double Deck G.G. Bridge
2) No Stonyan Interchange provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being Studied, Assumed in Service 1985

B-160
G-0
P-C



Route 80 Freeway only constructed (Panhandle)

Network basis

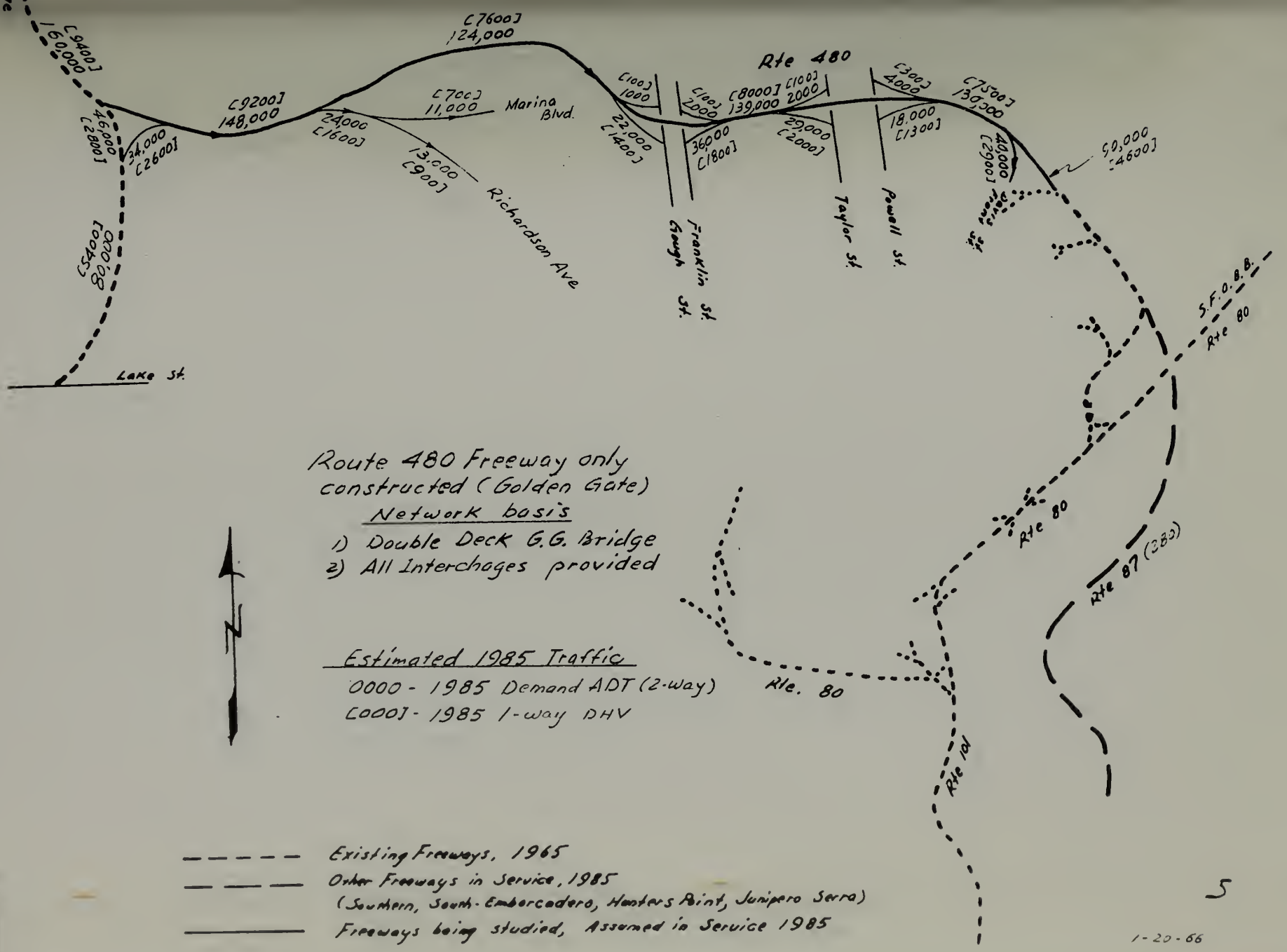
1) Double Deck G.G. Bridge
2) Stanyon & Divisadero Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being Studied, Assumed in Service 1985

B-160
G-0
P-D



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Double Deck G.G. Bridge
2) All Interchanges provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[0000] - 1985 1-way DHV

— — — — — Existing Freeways, 1965

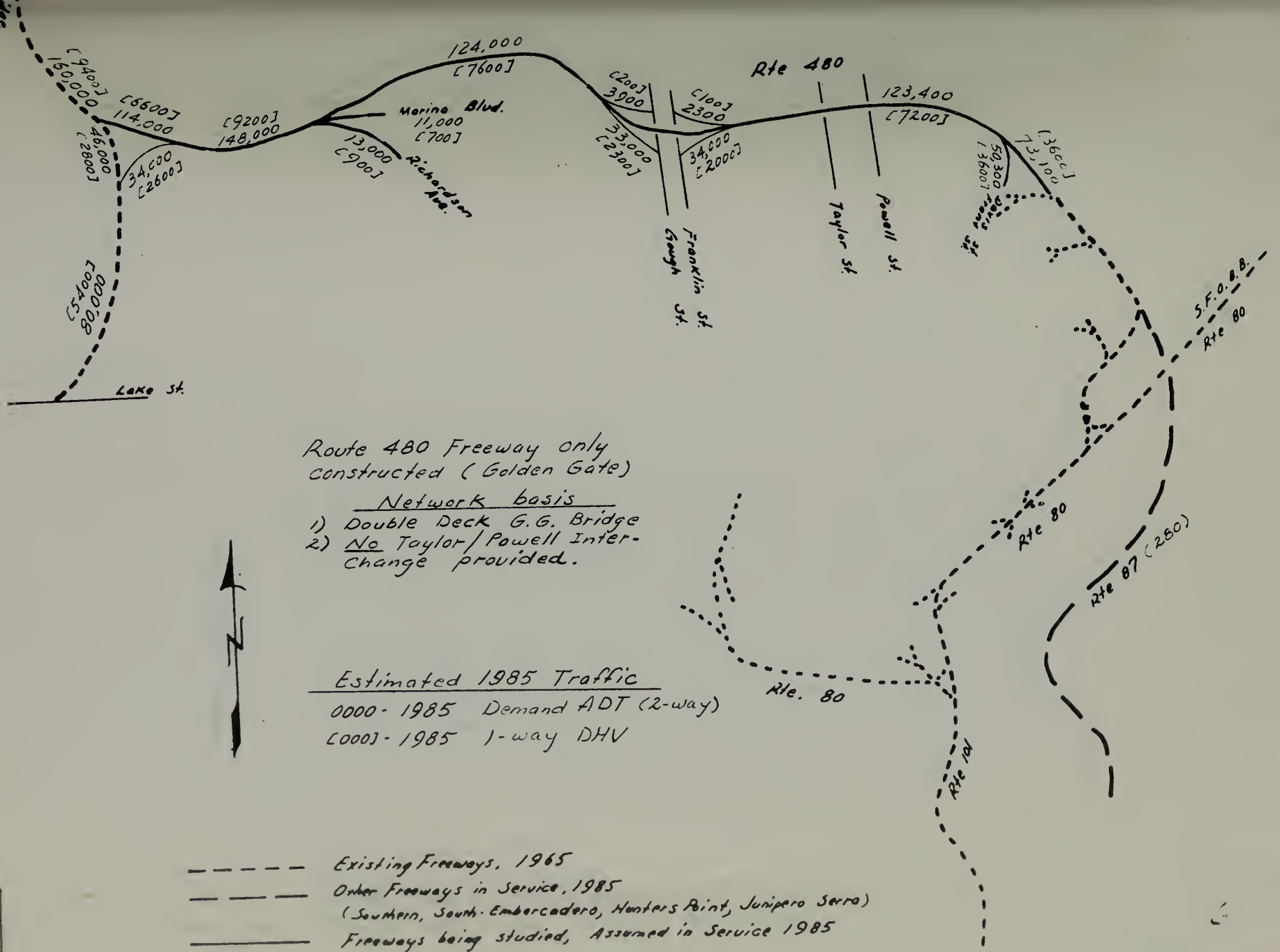
— — — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-160
G-1
P-0

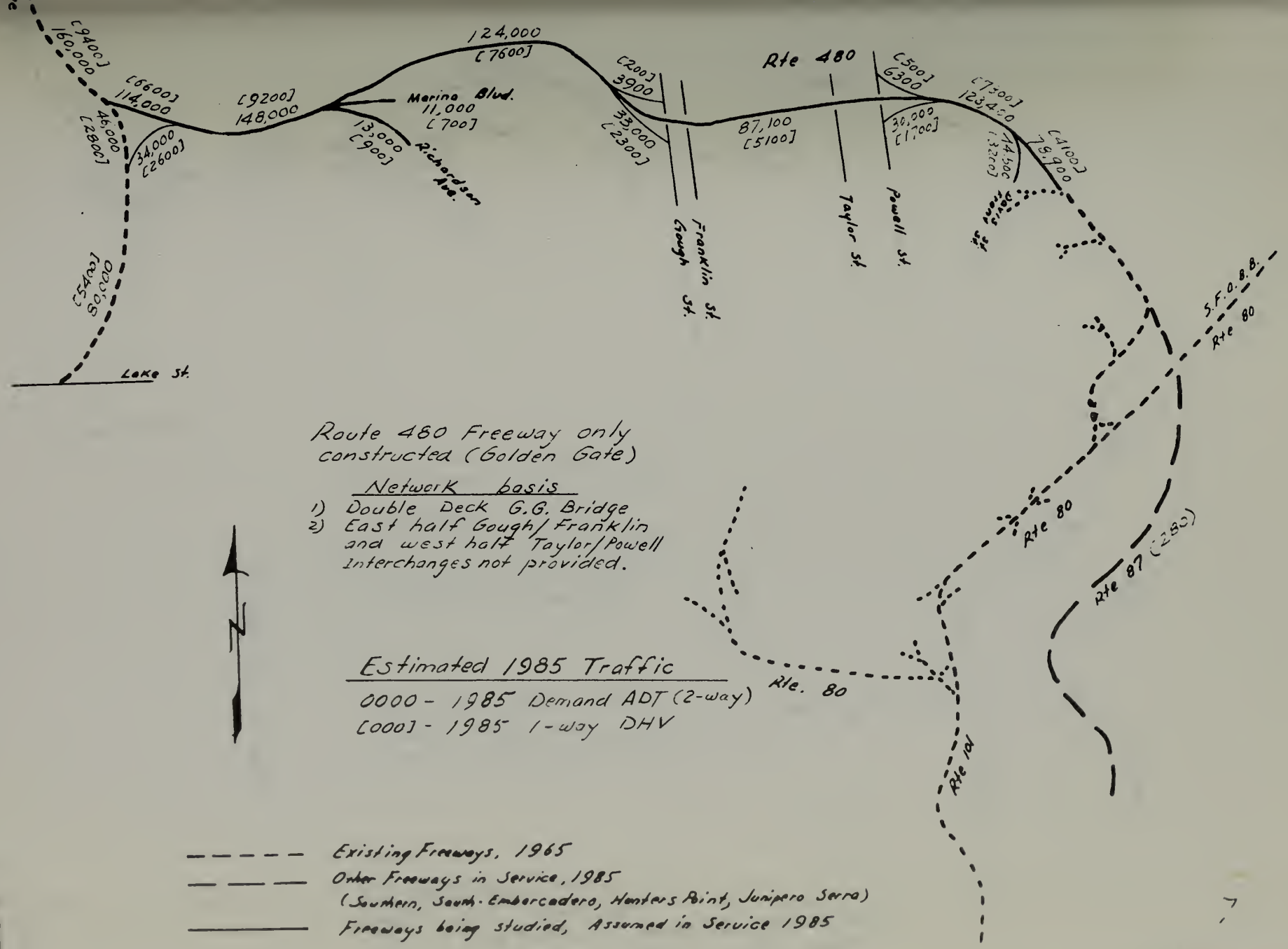
5

1-20-66



B-160
G-2
P-0

1-20-66



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Double Deck G.G. Bridge
2) East half Gough/Franklin and west half Taylor/Powell Interchanges not provided.

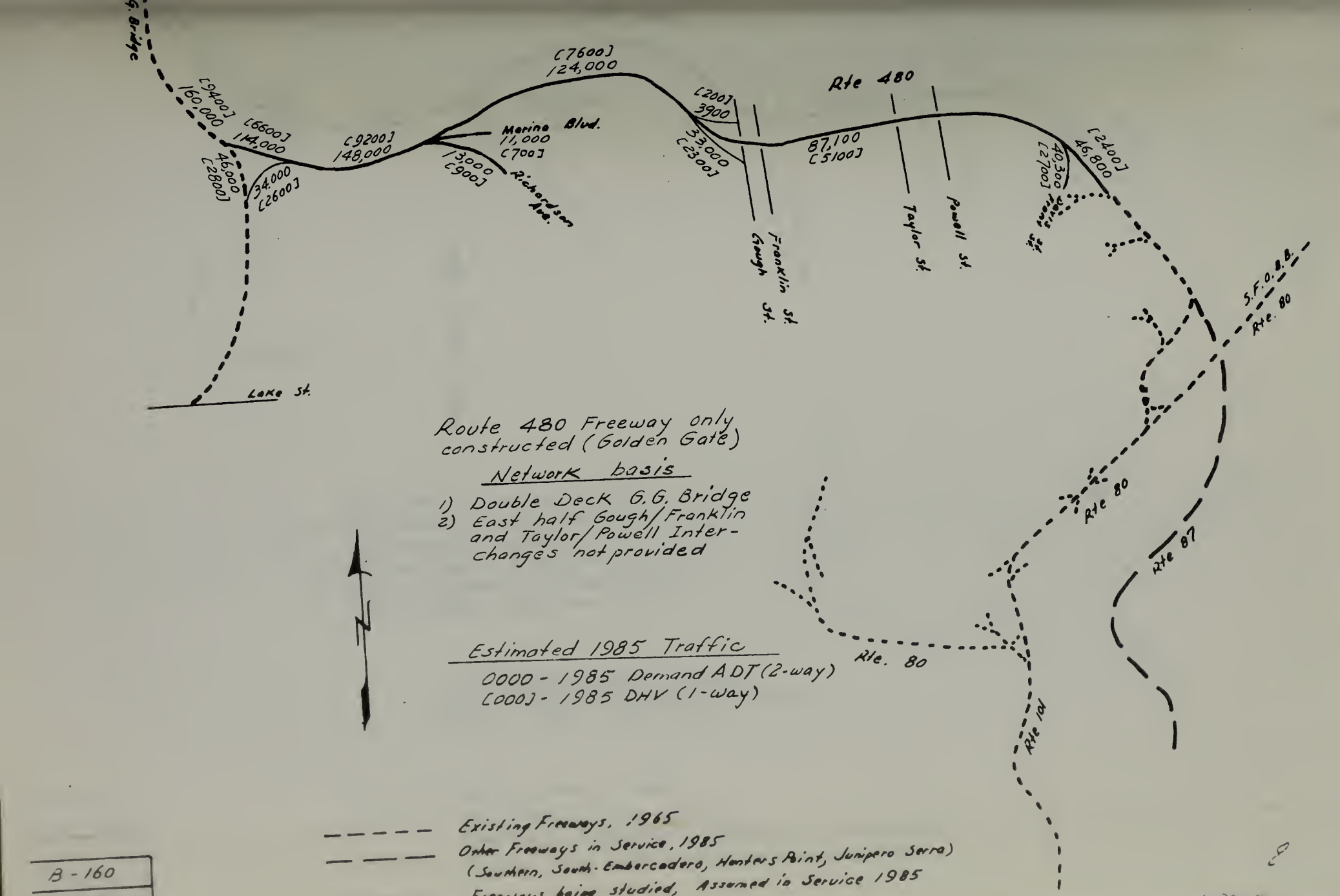
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

- – – – – Existing Freeways, 1965
- — — — Other Freeways in Service, 1985 (Southern, South-Embarcadero, Hunters Point, Junipero Serra)
- ——— Freeways being studied, Assumed in Service 1985

B-160
G-3
P-0

1-20 65



Route 480 Freeway only constructed (Golden Gate)

Network basis

1) Double Deck G.G. Bridge
2) East half Gough/Franklin and Taylor/Powell Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 DHV (1-way)

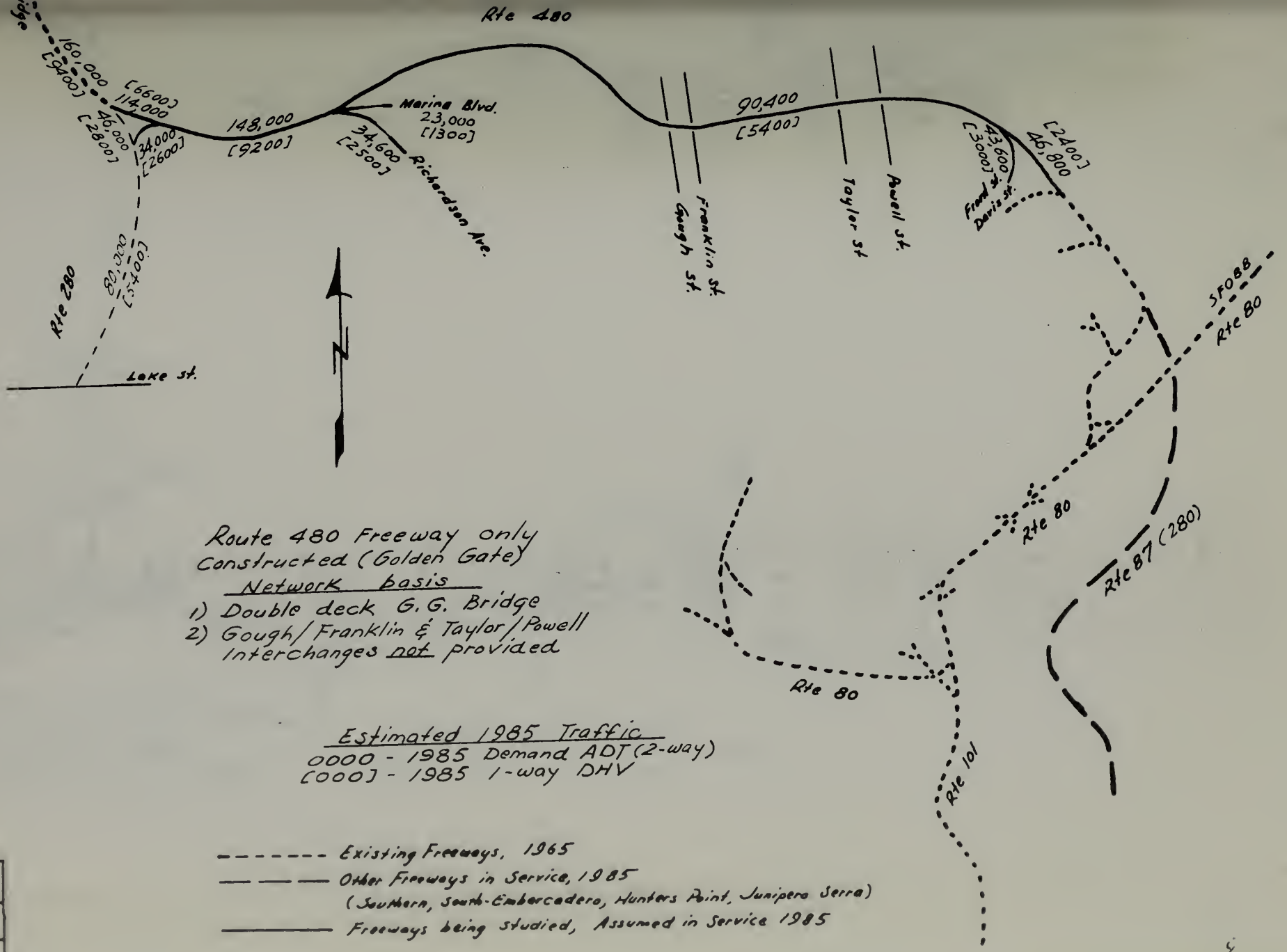
Existing Freeways, 1965

Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

Freeways being studied, Assumed in Service 1985

B - 160
G - 4

1-20-66



Route 480 Freeway only
Constructed (Golden Gate)

Network basis

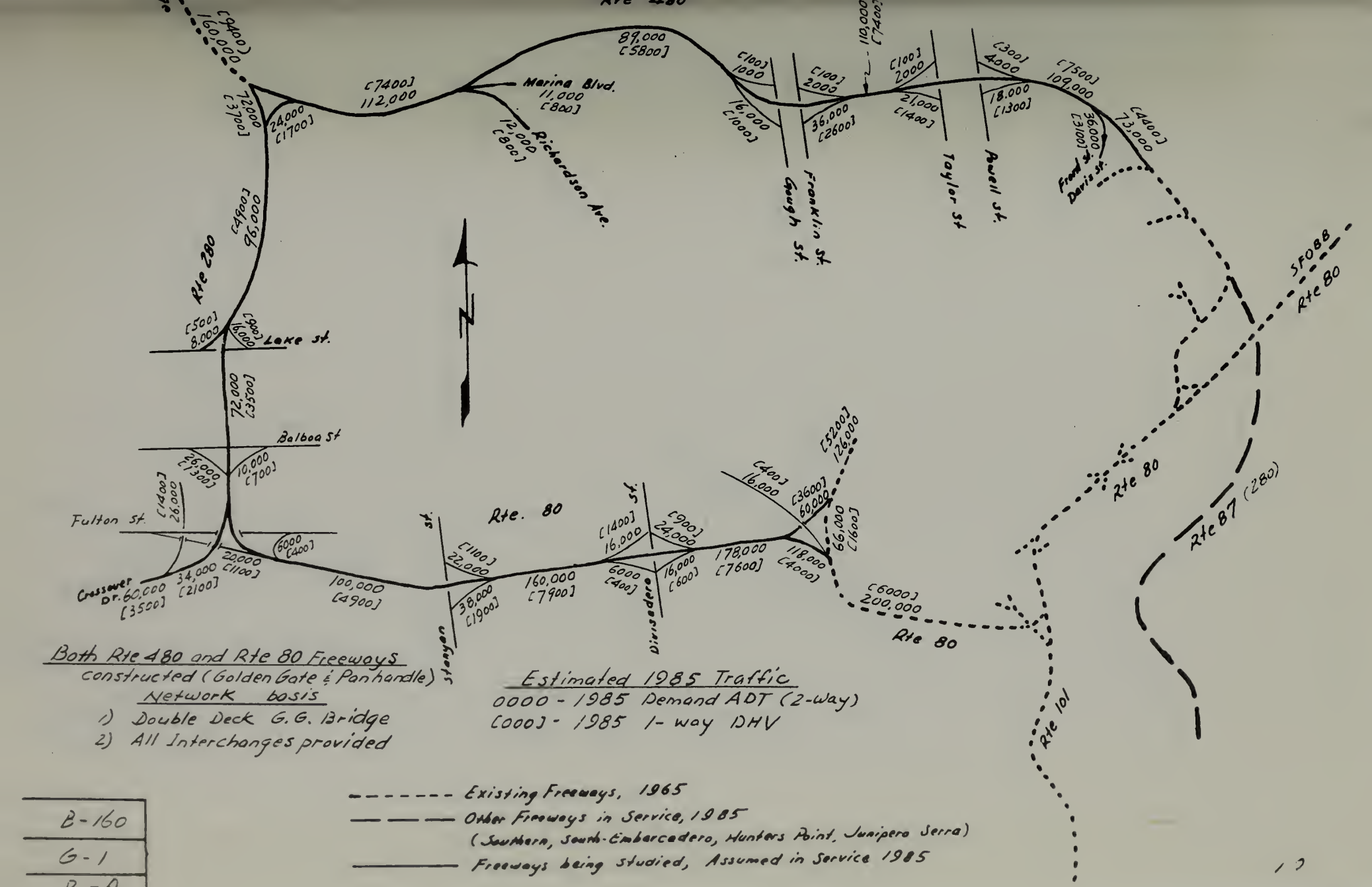
1) Double deck G. G. Bridge
2) Gough/Franklin & Taylor/Powell Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-160
G-5
P-0



Both Rte 480 and Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Double Deck G.G. Bridge
2) All Interchanges provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

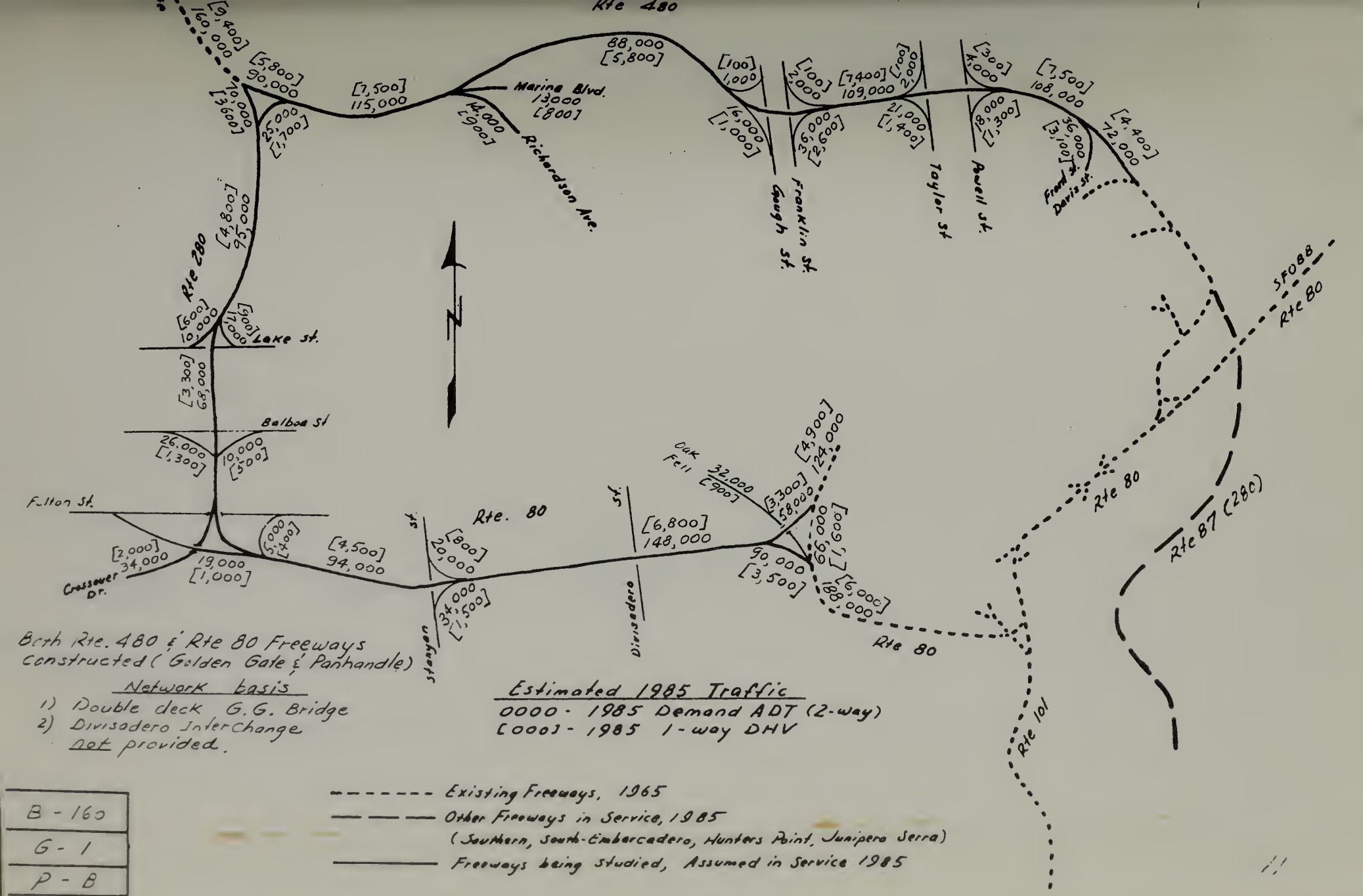
[000] - 1985 1-way DHV

------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985 (Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

B-160
G-1
P-A



Both Rte. 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Double deck G.G. Bridge
2) Divisadero Interchange not provided.

Estimated 1985 Traffic

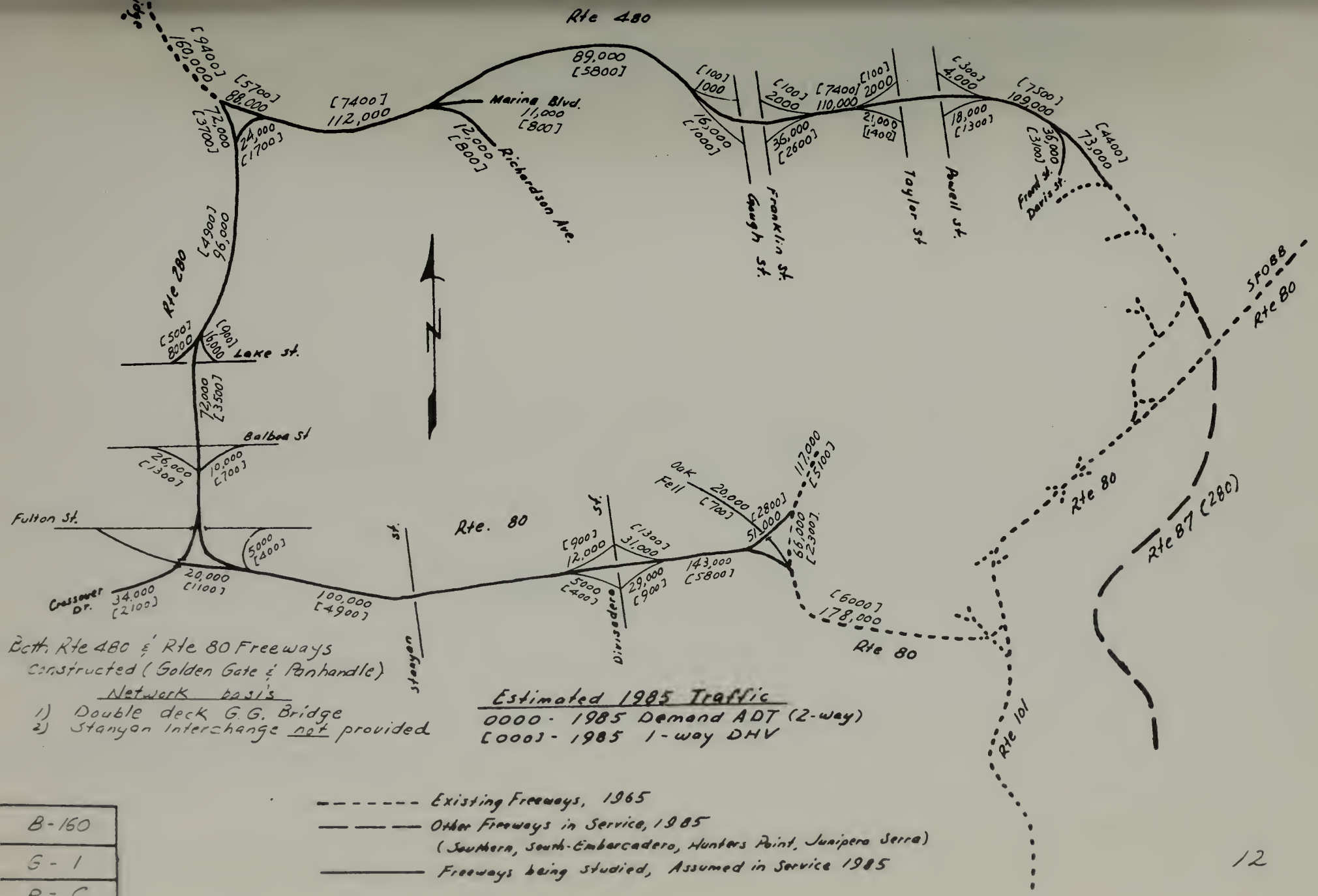
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

Existing Freeways, 1965

Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

Freeways being studied, Assumed in Service 1985

B - 160
G - 1
P - B



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Double deck G.G. Bridge
2) Stanyon Interchange not provided

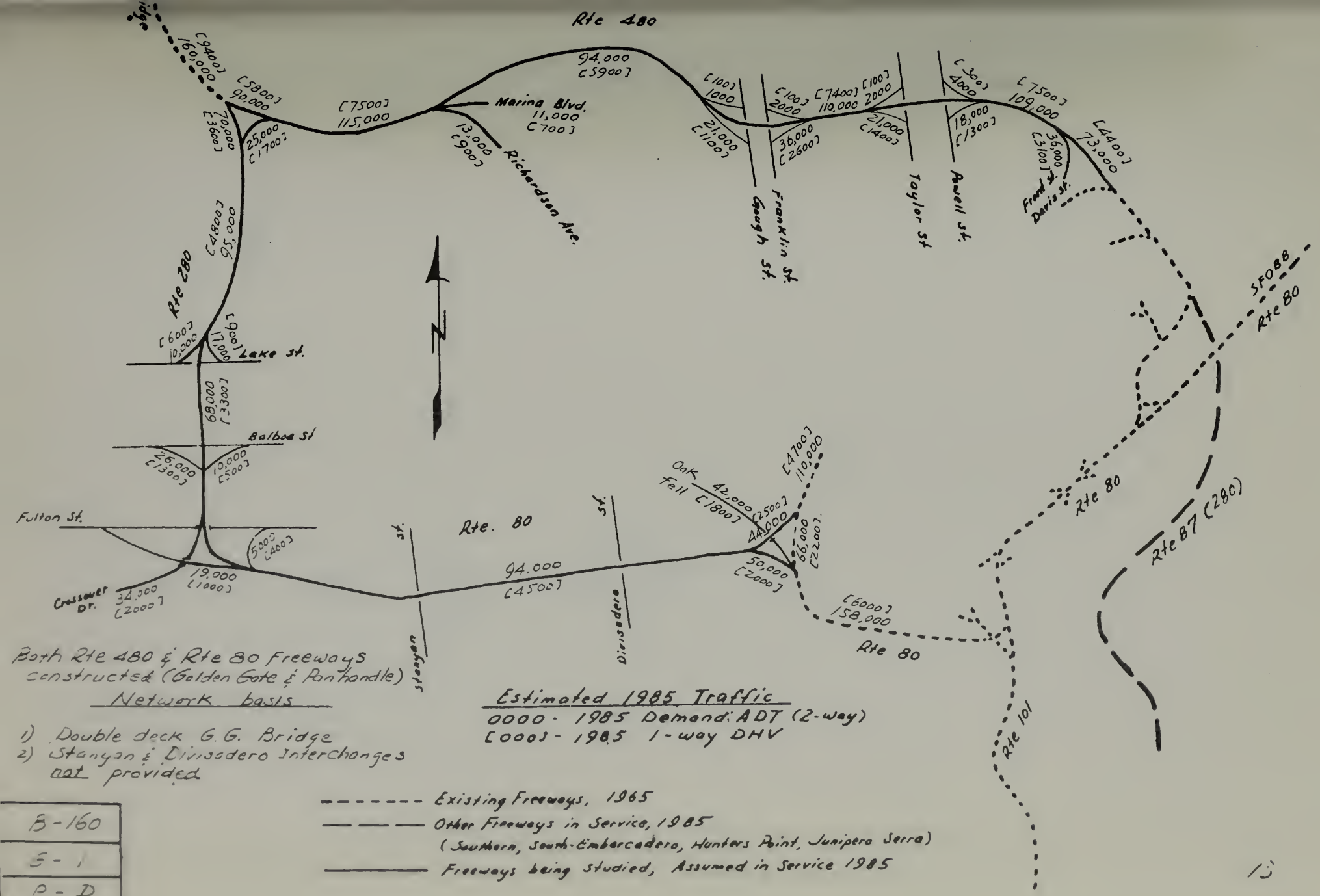
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-160
G-1
P-C

12



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

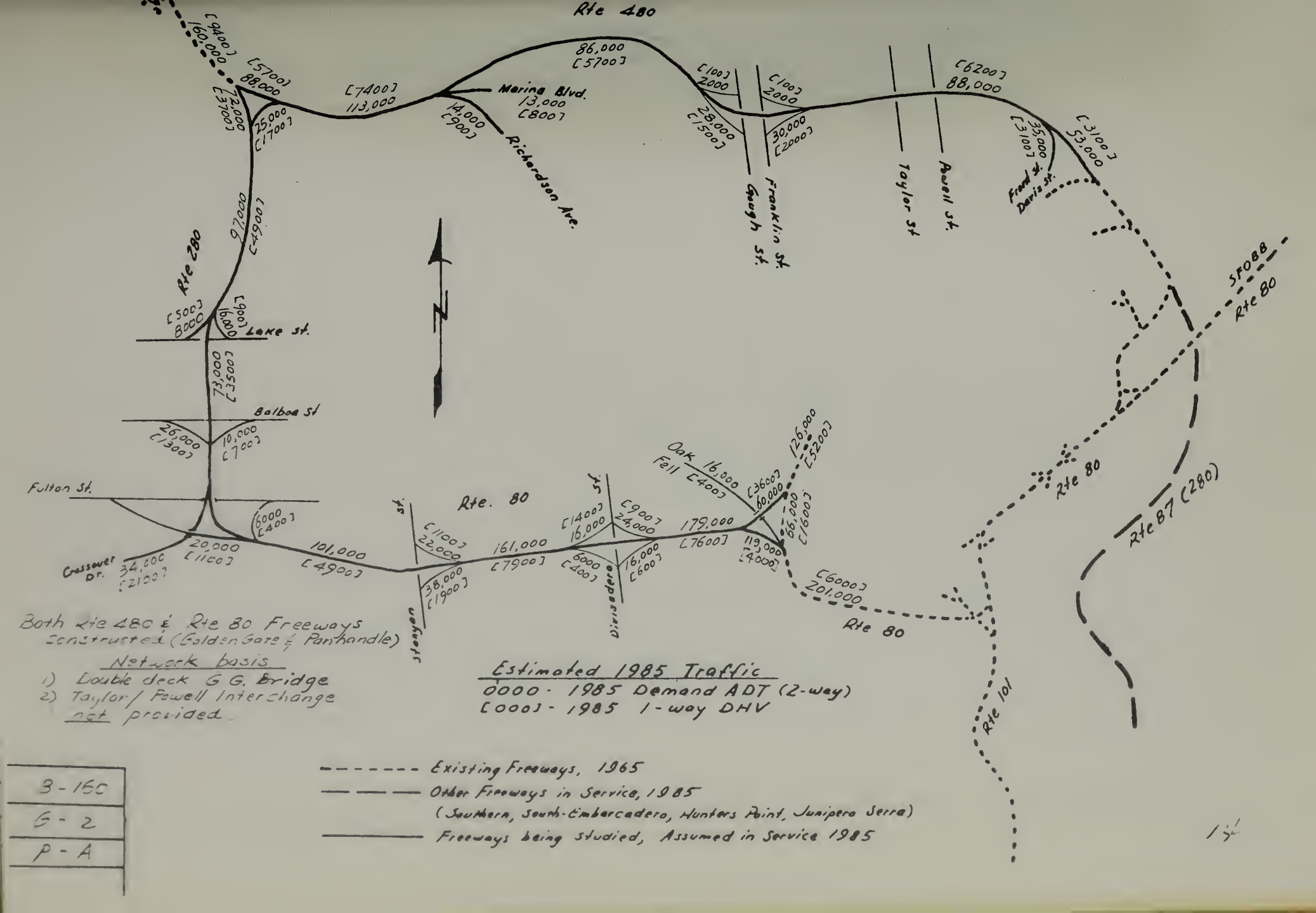
1) Double deck G.G. Bridge
2) Stanyan & Divisadero Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-160
E-1
P-D



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Double deck G.G. Bridge
2) Taylor / Powell Interchange not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

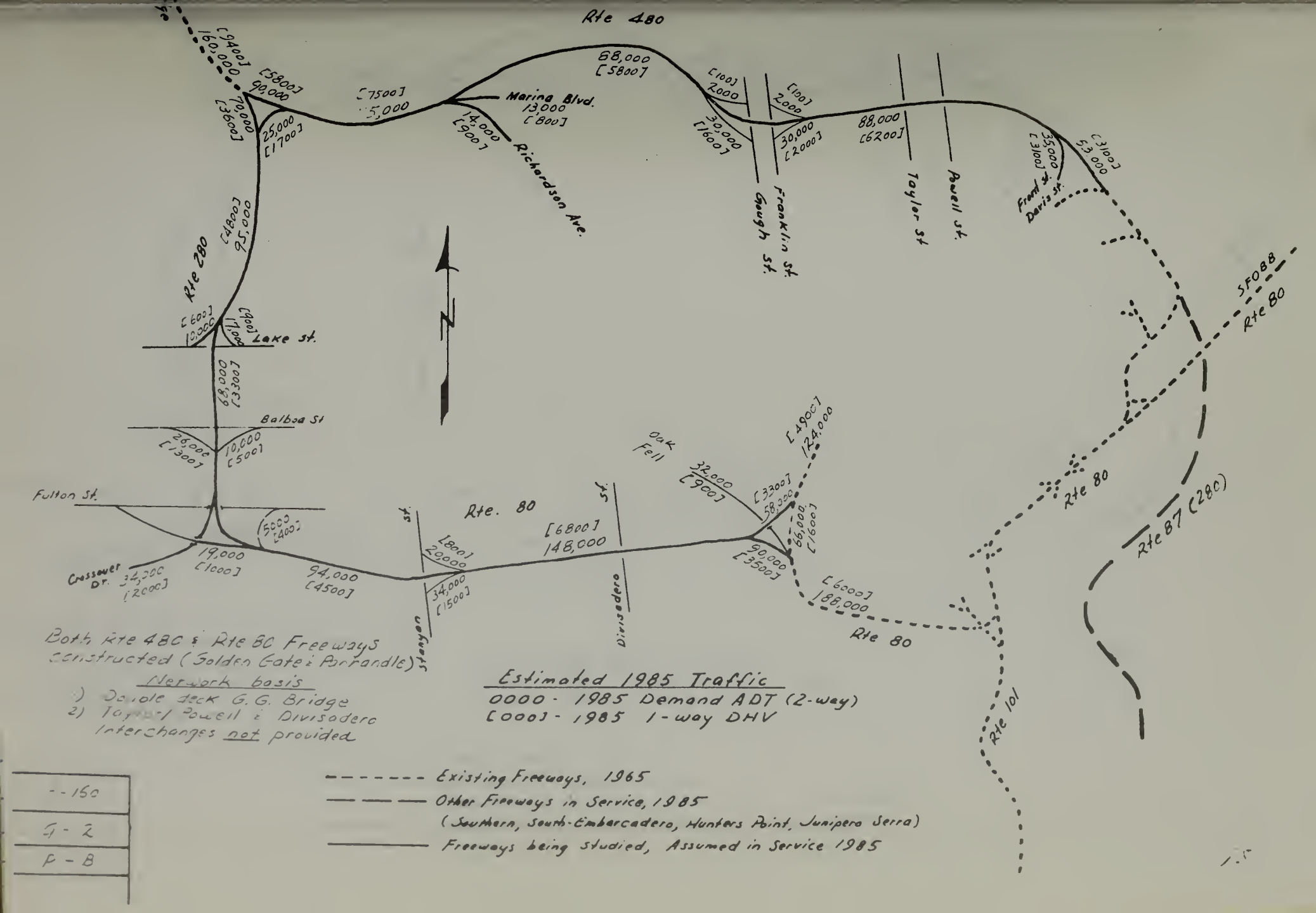
------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

——— Freeways being studied, Assumed in Service 1985

3-15C
G-2
P-A

14



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Portandle)

Network basis

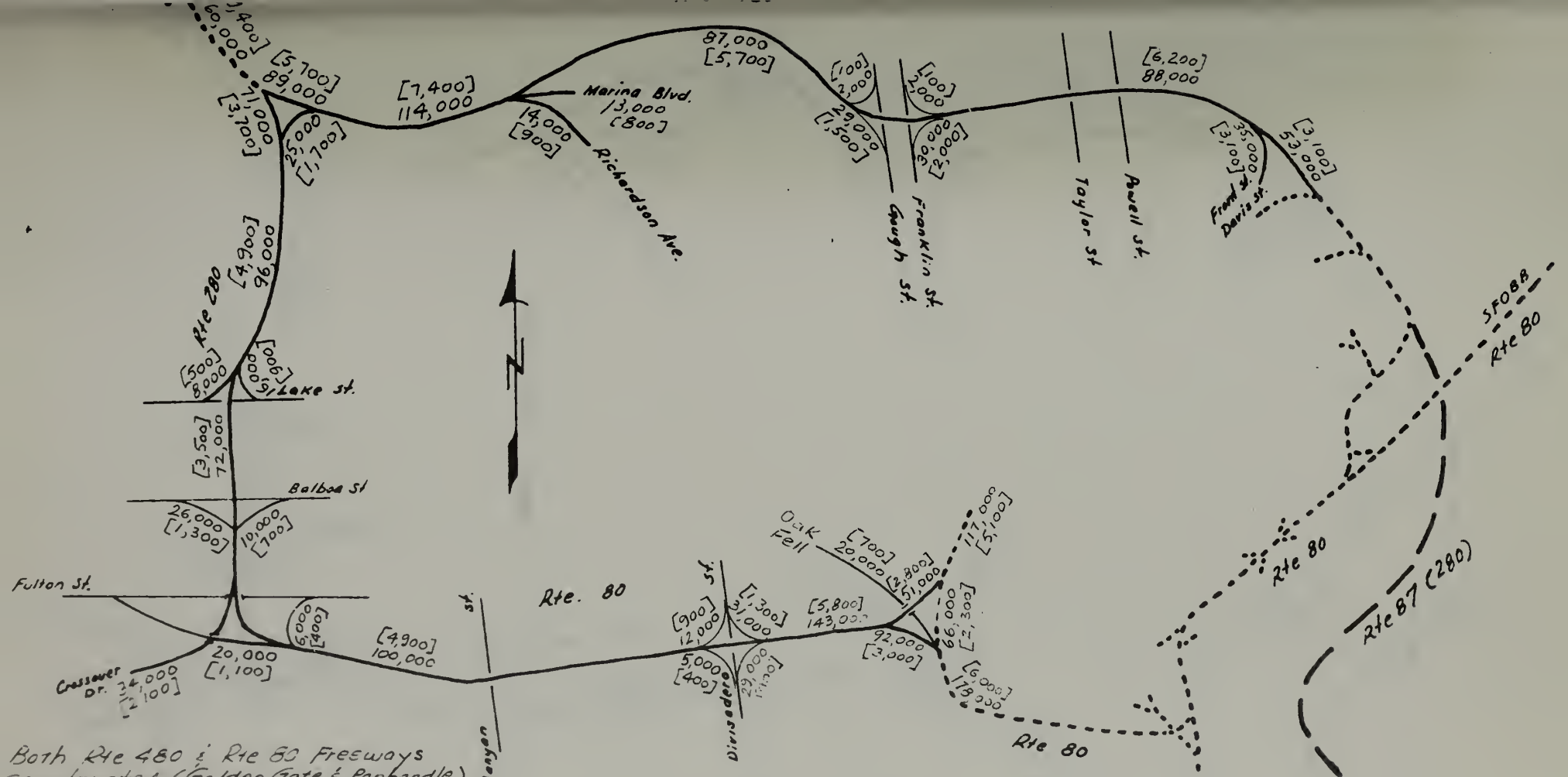
1) Double deck G.G. Bridge
2) Toll at Powell & Divisadero Interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

- - - - - - - Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

- - 150
G - 2
P - B



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

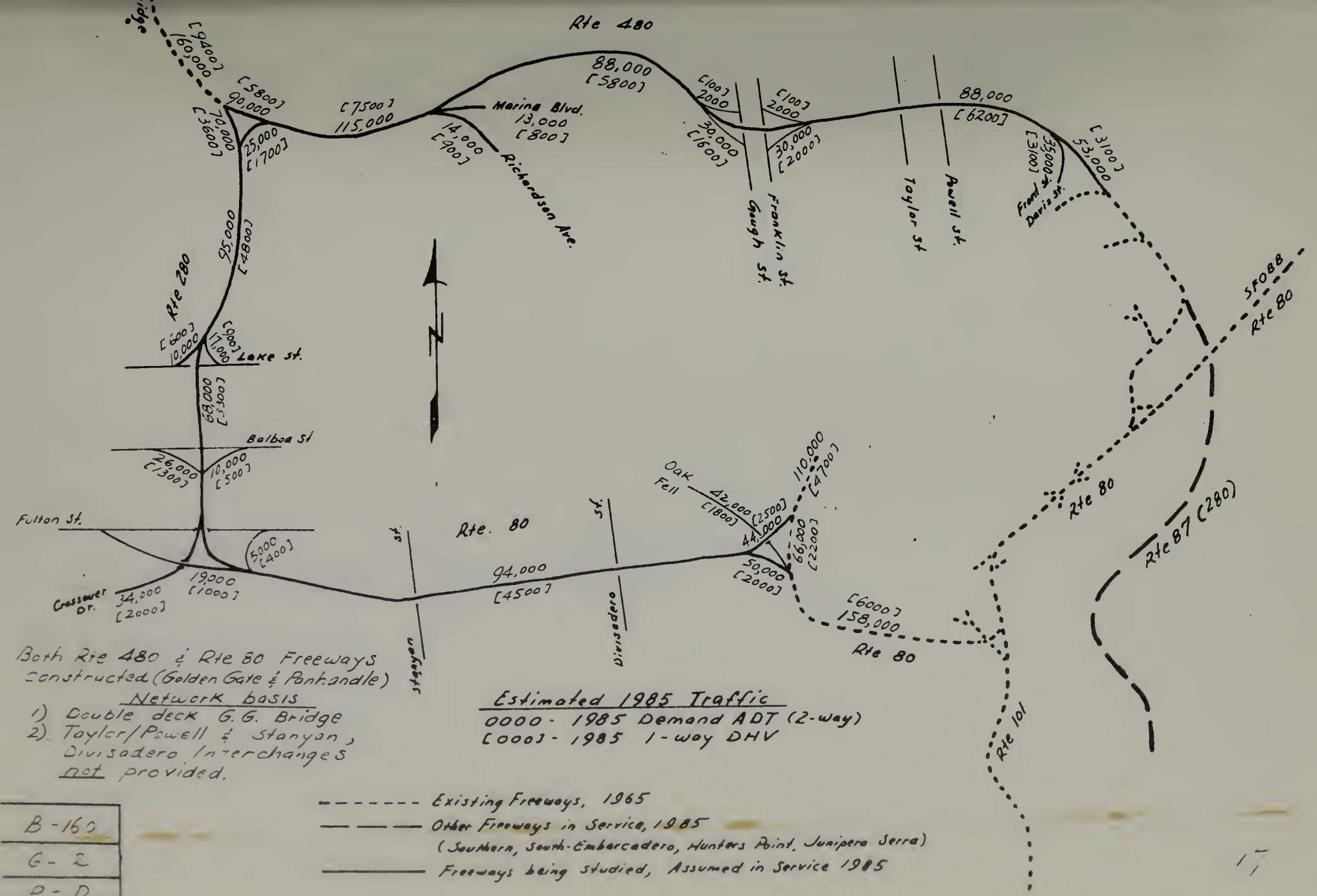
1) Double deck G.G. Bridge
2) Taylor/Powell & Stanyan Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 160
G - 2
P - C



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

1) Double deck G.G. Bridge
2) Taylor/Powell & Stanyan, Divisadero Interchanges not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)

[000] - 1985 1-way DHV

------- Existing Freeways, 1965

— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)

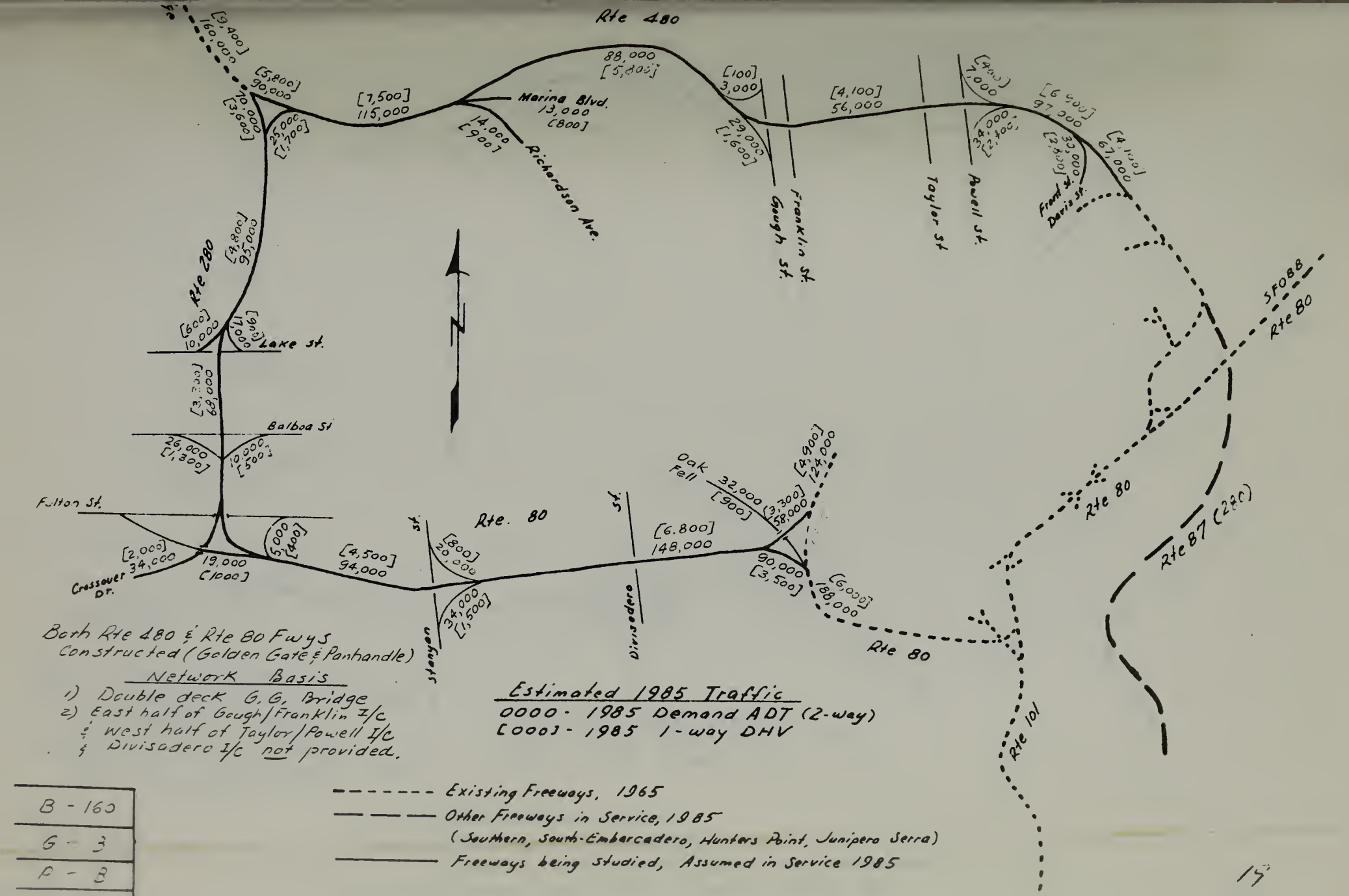
——— Freeways being studied, Assumed in Service 1985

B-160

G-2

P-D

17



Both Rte 480 & Rte 80 Fwys Constructed (Golden Gate & Panhandle)

Network Basis

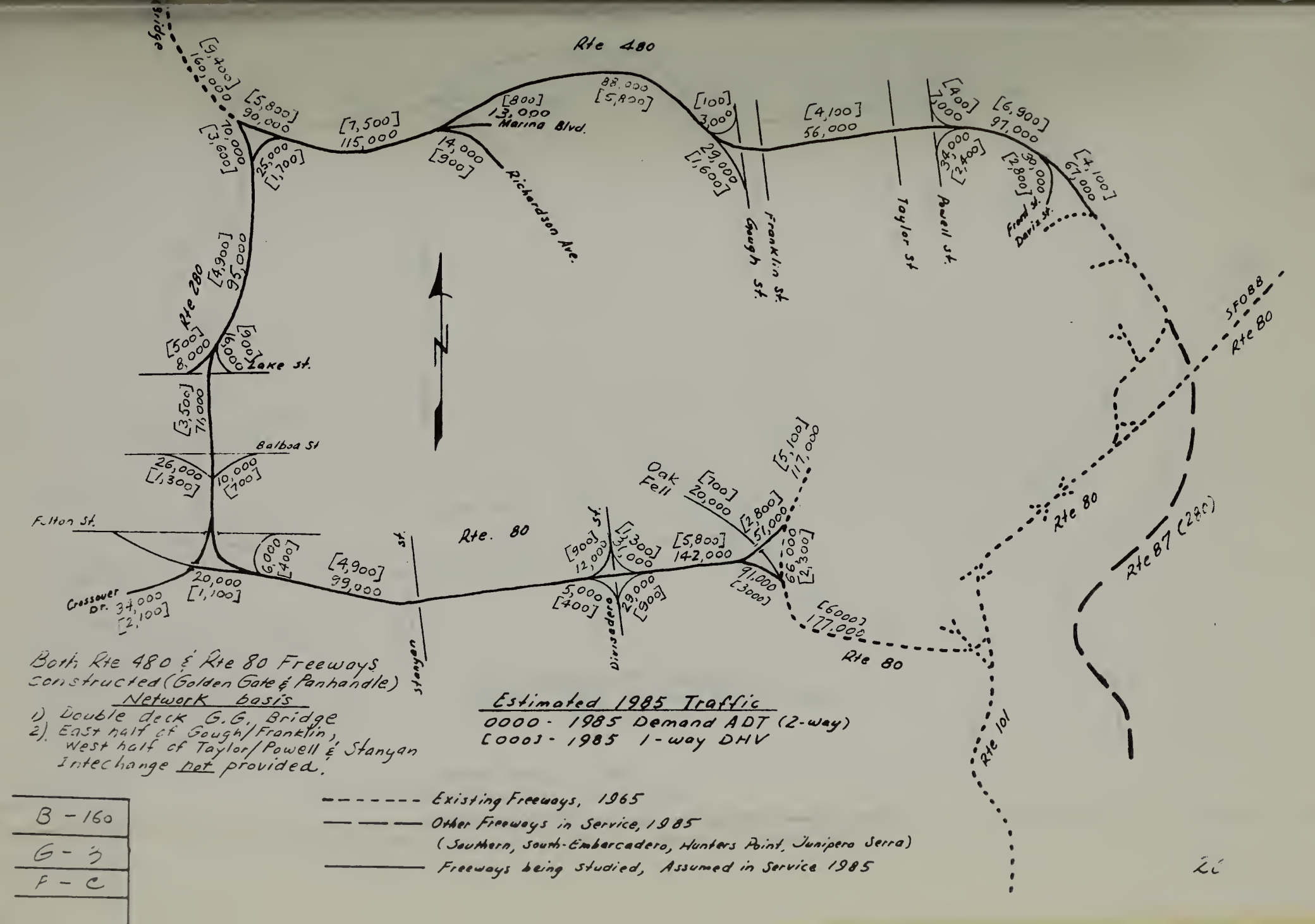
1) Double deck G.G. Bridge
2) East half of Gough/Franklin I/C & west half of Taylor/Powell I/C & Divisadero I/C not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 160
G - 3
P - 8



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle) Network basis

1) Double deck G.G. Bridge
2) East half of Gough/Franklin, West half of Taylor/Powell & Stanyan Interchange not provided.

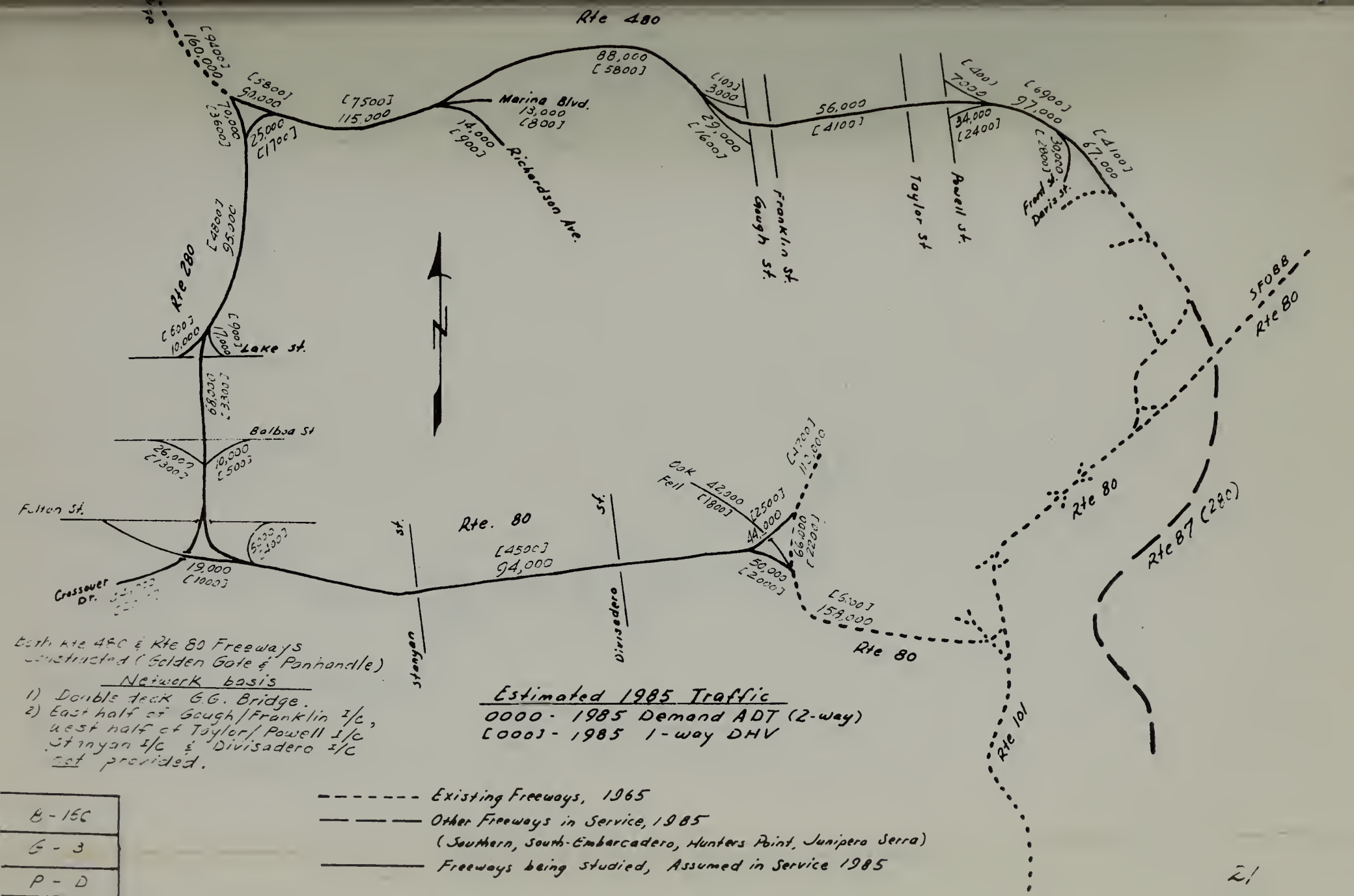
Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 160
G - 3
F - C

26



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

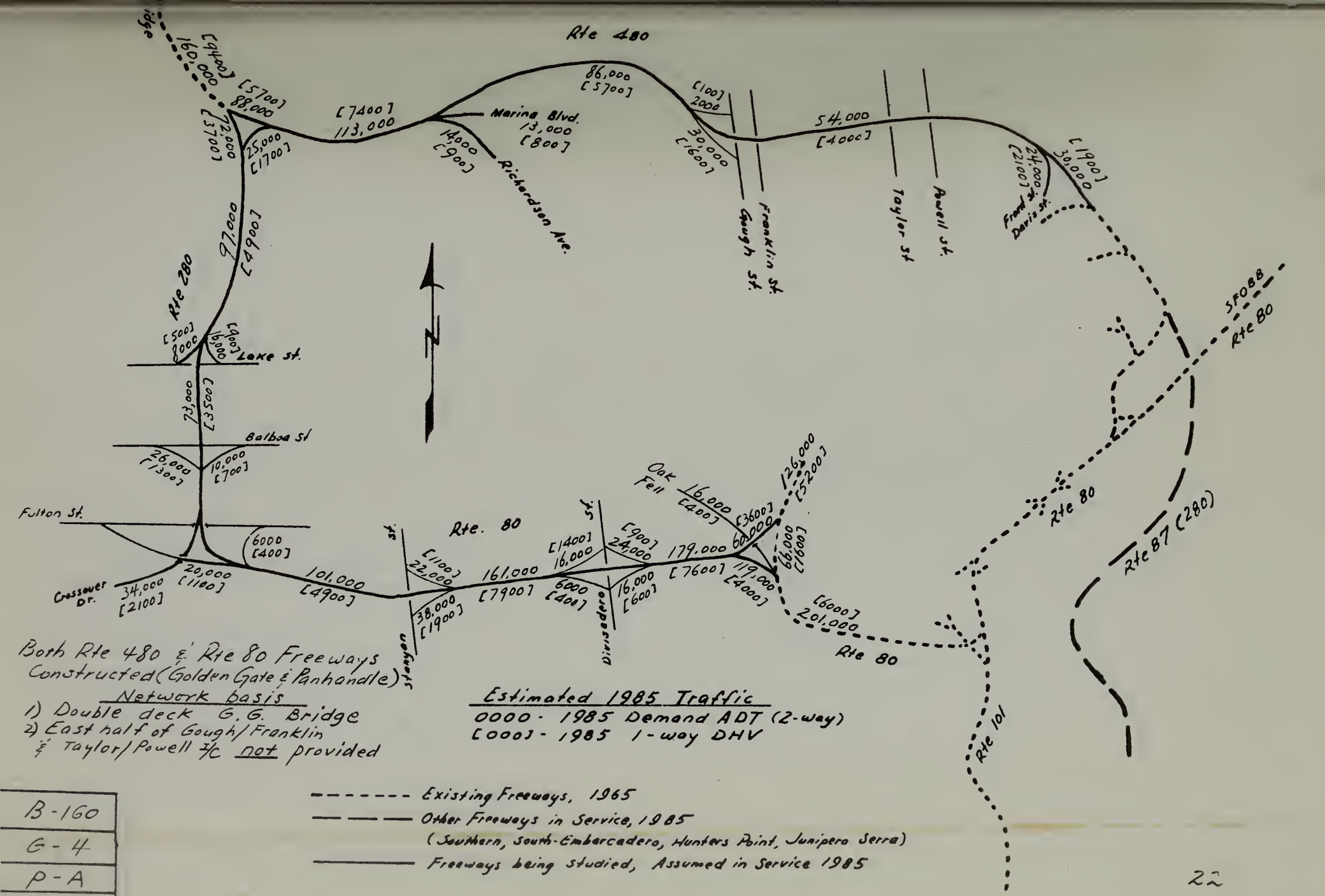
1) Double deck G.G. Bridge.
2) East half of Gough/Franklin I/C, west half of Taylor/Powell I/C Stanyan I/C & Divisadero I/C not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 15C
C - 3
P - D



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Panhandle) Network basis

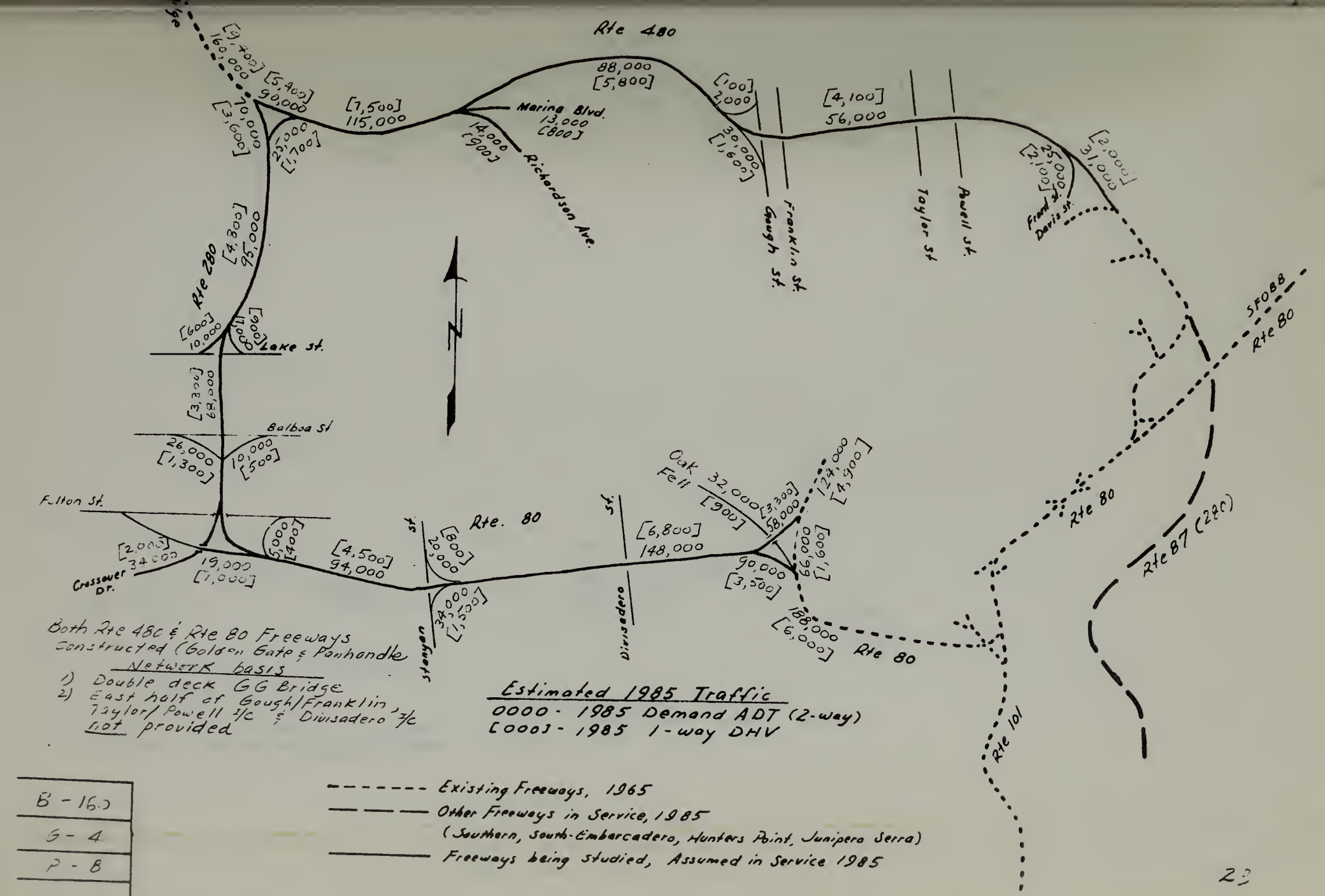
1) Double deck G.G. Bridge
2) East half of Gough/Franklin & Taylor/Powell f/c not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-160
G-4
P-A



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle Network basis

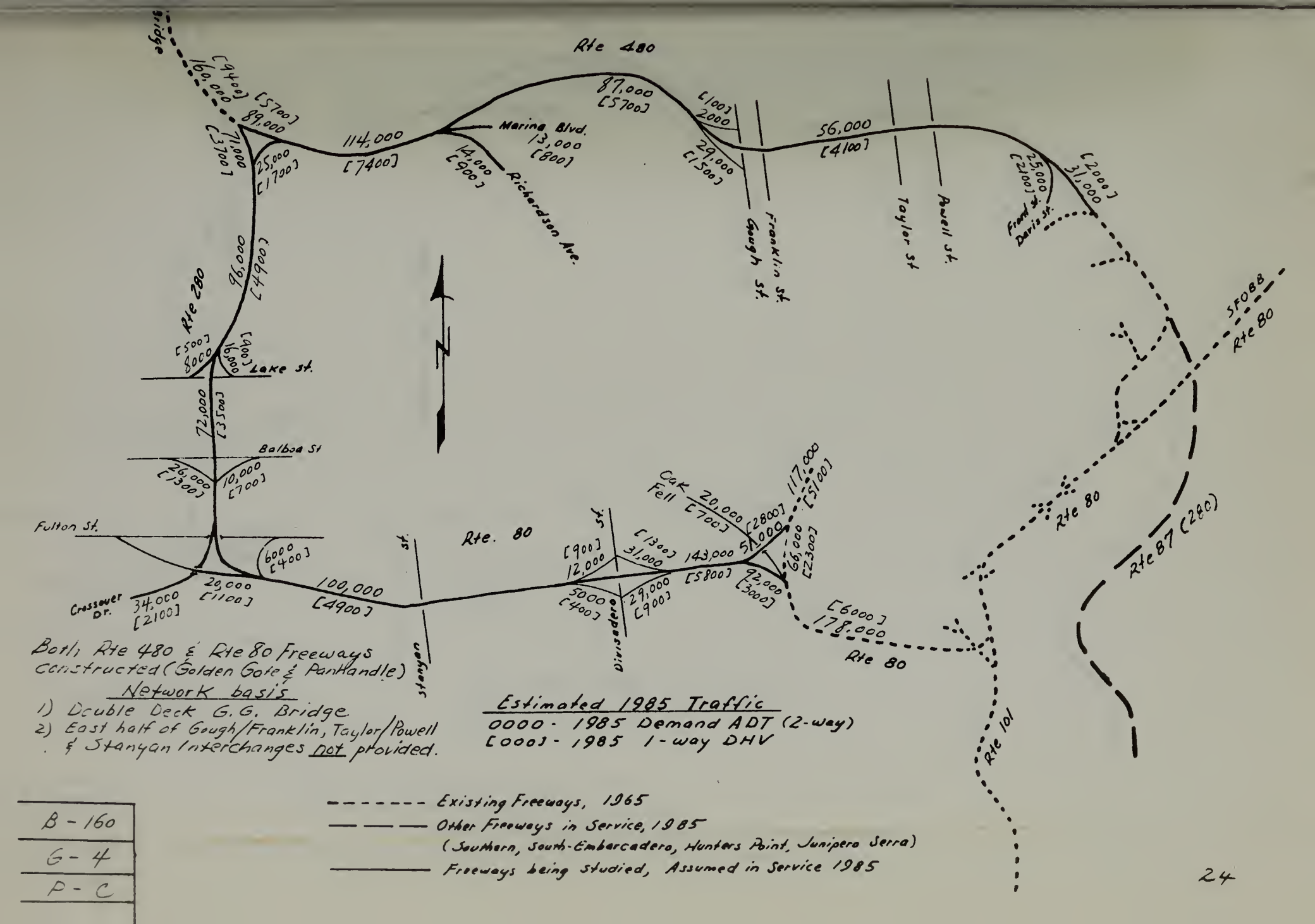
1) Double deck GG Bridge
2) East half of Gough/Franklin, Taylor/Powell ½c & Divisadero ½c not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 16.0
G - 4
P - 8



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

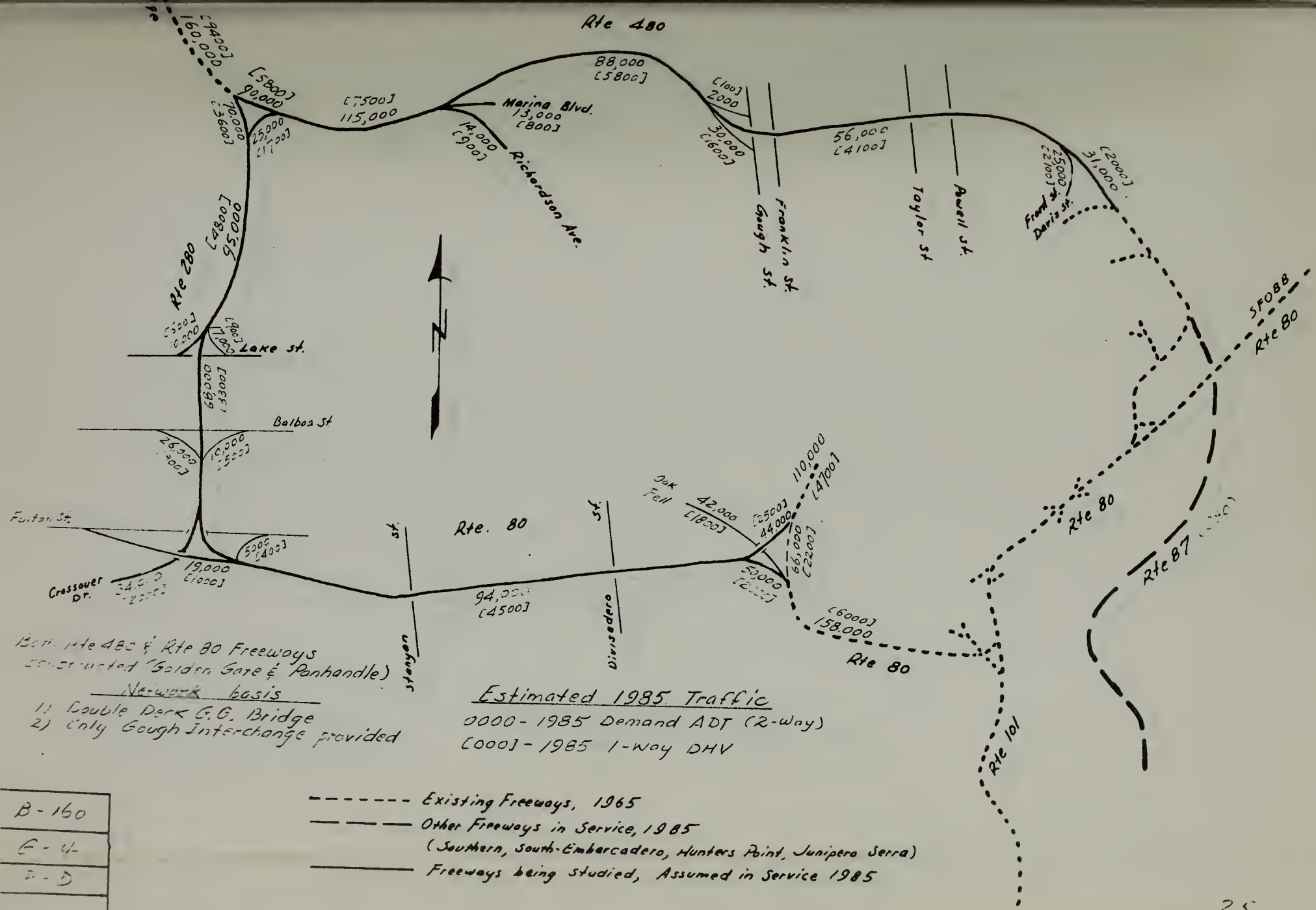
1) Double Deck G. G. Bridge
2) East half of Gough/Franklin, Taylor/Powell & Stanyan Interchanges not provided.

Estimated 1985 Traffic

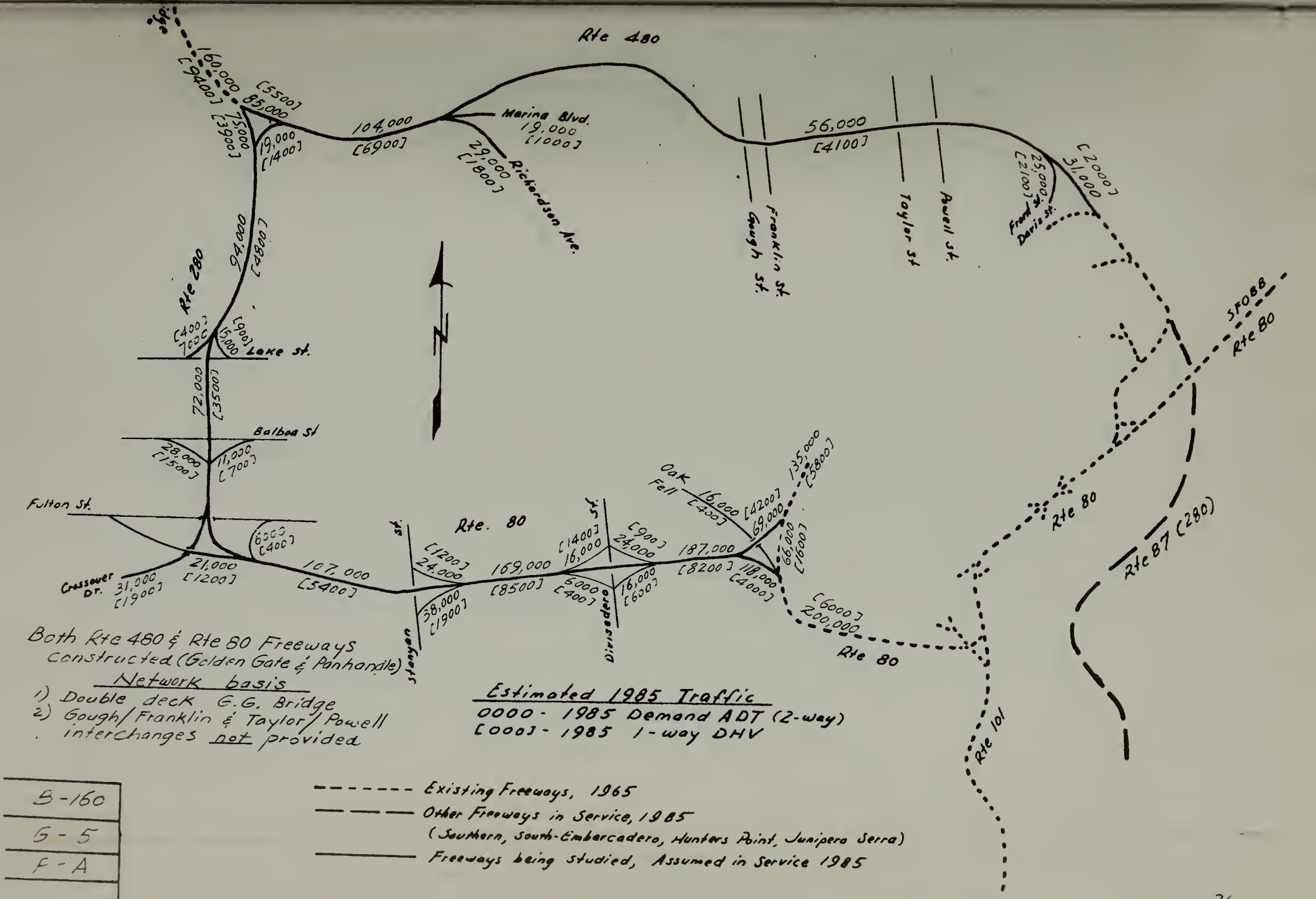
0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B - 160
G - 4
P - C


Rte 480
[9400] 160,000
[5800] 90,000
70,000 [3600]
25,000 [1700]
[7500] 115,000
Marina Blvd. 13,000 [800]
14,000 [900]
Richardson Ave.
88,000 [5800]
[100] 2,000
30,000 [1600]
Gough St.
Franklin St.
56,000 [4100]
Taylor St
Avell St.
25000 [2200]
[2000] 31,000
Front & Davis St.
Rte 280
[4800] 95,000
[500] 10,000
[900] 17,000
Lake St.
[3500] 69,000
Balboa St
26,000 [2000]
[5000] 10,000
Fulton St.
[5000] 19,000 [1000]
Crossover Dr.
[4000]
St.
Rte. 80
St.
Oak Fell
42,000 [1800]
[2500] 44,000
110,000 [4700]
66,000 [2200]
50,000 [2000]
94,000 [4500]
Steuger
Divisadero
[6000] 158,000
Rte 80
Rte 101
SFOBB
Rte 80
Rte 80
Rte 87
Both Rte 480 & Rte 80 Freeways
constructed (Golden Gate & Panhandle)
Network basis
1) Double Deck G.G. Bridge
2) Only Gough Interchange provided
Estimated 1985 Traffic
0000 - 1985 Demand ADT (2-Way)
[000] - 1985 1-Way DHV
Existing Freeways, 1965
Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
Freeways being studied, Assumed in Service 1985

B-160
C-4
D



Both Rte 480 & Rte 80 Freeways constructed (Golden Gate & Panhandle)

Network basis

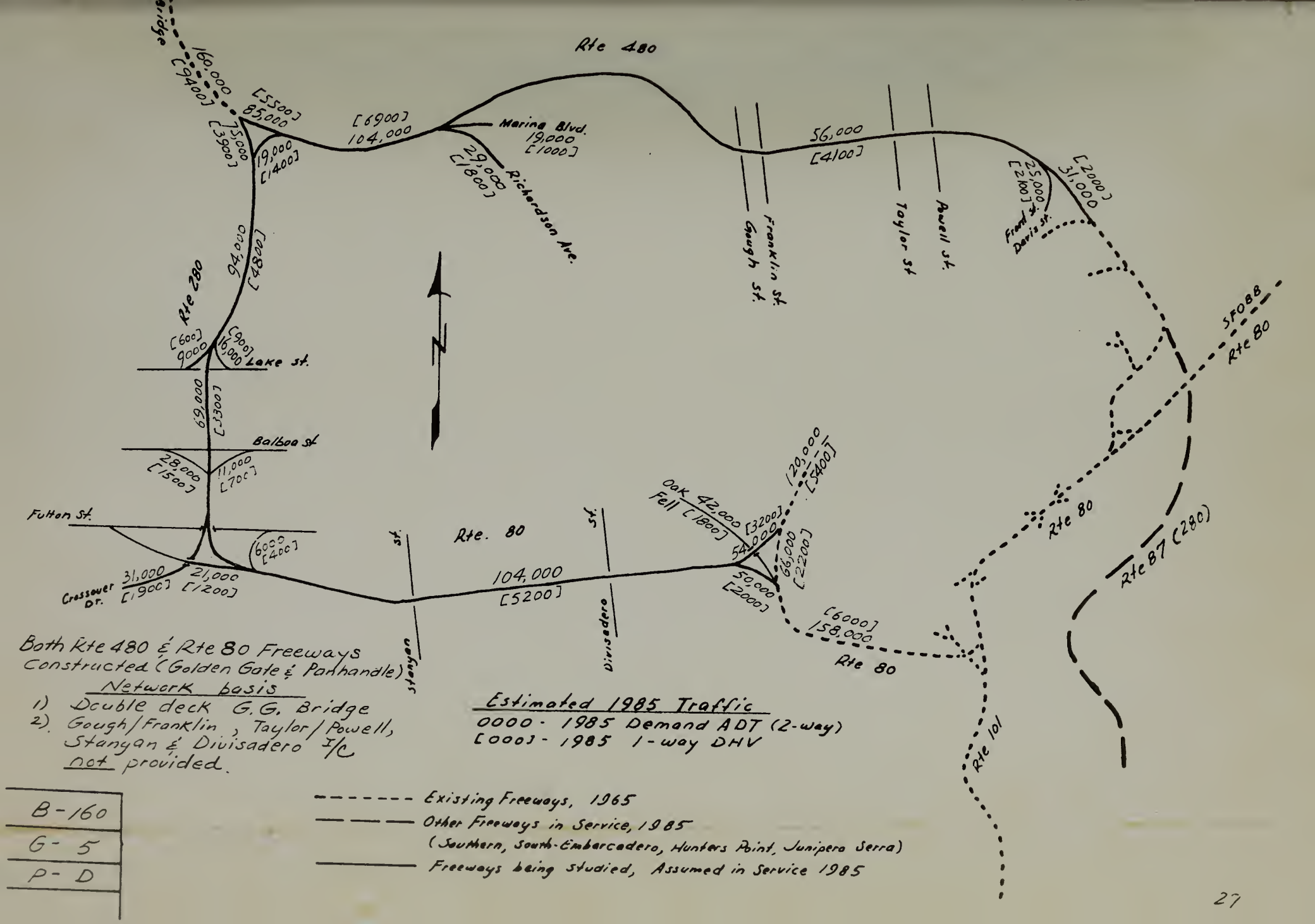
1) Double deck G.G. Bridge
2) Gough/Franklin & Taylor/Powell interchanges not provided

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

------- Existing Freeways, 1965
— — — Other Freeways in Service, 1985
(Southern, South-Embarcadero, Hunters Point, Junipero Serra)
——— Freeways being studied, Assumed in Service 1985

B-160
G-5
F-A



Both Rte 480 & Rte 80 Freeways Constructed (Golden Gate & Parkhandle) Network basis

1) Double deck G.G. Bridge
2) Gough/Franklin, Taylor/Powell, Stanyan & Divisadero I/C not provided.

Estimated 1985 Traffic

0000 - 1985 Demand ADT (2-way)
[000] - 1985 1-way DHV

- Existing Freeways, 1965
- Other Freeways in Service, 1985 (Southern, South-Embarcadero, Hunters Point, Junipero Serra)
- Freeways being studied, Assumed in Service 1985

B-160
G-5
P-D